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**THE IMPOTENCE OF PARTICIPATION:
AN EXAMINATION OF THE INTEGRATED PEST MANAGEMENT -
FARMER FIELD SCHOOL PROGRAM IN SVAY TEAP, CAMBODIA**

by
DAVID SIMPSON, B.A. (Hons.)

A thesis submitted to
the Faculty of Graduate Studies and Research
in partial fulfillment of
the requirements for the degree of
Master of Arts

Norman Paterson School of International Affairs

Carleton University
Ottawa, Ontario
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The undersigned hereby recommend to the Faculty of Graduate Studies and Research acceptance of this thesis submitted by David James Simpson as partial fulfilment of the requirements for the degree of Master of Arts.

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Abstract

The Integrated Pest Management (IPM) - Farmer Field School (FFS) program in Cambodia is an initiative meant to accelerate the creation, application and implementation of sustainable crop protection strategies in Cambodia. This thesis uses primary information generated from a case study analysis of an IPM-FFS intervention in Svay Teap, Cambodia, to evaluate the unique approach of agricultural extension methods employed by the IPM-FFS Program. The thesis argues that farmer participation is integral to the success of any agricultural extension program, and that it must also be tied to empowerment objectives. The thesis concludes that while the participatory strategy of the IPM-FFS intervention is an improvement over conventional agricultural extension methods, it fails to 'truly' empower resource-poor farmers in the community to promote the long term sustainability of agriculture in Svay Teap.

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List of Acronyms

CDRI	Cambodian Development Research Institute
CPP	Cambodian People's Party
CRS	Catholic Relief Services
FAO	Food and Agriculture Organization
FFS	Farmer's Field Schools
FFW	Food For Work
FUNCINPEC	Front Uni National pour un Cambodge Indépendant, Neutre, Pacifique, et Coopératif
FSR	Farming Systems Research
IPM	Integrated Pest Management
IDRC	International Development Research Centre
IRRI	International Rice Research Institute
KR	Khmer Rouge
MAFF	Ministry of Agriculture, Forests and Fisheries
NGO	Non-Governmental Organization
ORC	Organisation Royale des Cooperatives
PRA	Participatory Rural Appraisal
PRK	People's Republic of Kampuchea
SEARCA	Semeao Regional Center for Graduate Study and Research in Agriculture
SIDA	Swedish International Development Agency
UPLB	University of the Philippines at Los Banos

Figure 1 : MAP OF THE KINGDOM OF CAMBODIA

©1992 Magellan Geographix^{SM} Santa Barbara, CA.

Source : CNN Internet, 1997

Chapter I

Introduction

1.1 A Picture Perfect Postcard?

The vast expanse of rice paddy that blankets the southeastern province of Cambodia is an impressive sight to behold. The afternoon sun descends slowly, illuminating the soft green carpet which extends to the horizon. This is an image that one might find on a postcard sold in the busy market stalls of Phnom Penh where the merchants eagerly hawk their wares to the ever increasing numbers of tourists who venture here. It's a picture that presents an image of magnificent natural beauty and increasing prosperity in Cambodia. And yet, if our description stopped here, it would also be a picture that conceals more than it reveals, because nowhere do we see the influence of the men and women who are responsible for the harvest - the farmers themselves are invisible.

In a sense that's why we've come here today - a translator-come-driver and myself - to meet the people who farm these lands and attempt to put them back into the picture. We're careening down National Highway Two on a rented motorbike, dodging the enormous potholes left by ravaging floods, swerving off the road just in time to miss an on-coming bus from Vietnam, because after nearly two decades of war and violence, Cambodia is in the grasp of a modern agricultural revolution. We're here because an alternative method of agricultural extension has been applied here and we want to find out the results.

My ever skillful driver, Socheat, turns north from the National Highway onto one of the

many rutted dirt roads that criss-cross the Cambodian countryside. The "motodoop", as the 100 cc motorcycles are called locally, is more used to carrying heavy loads of cargo and even entire families of up to six people on its reinforced frame. Today however, the load is notably lighter with just the two of us, a tape recorder, a notebook, a map, some photos and a couple bottles of drinking water to drown our thirsts under a blistering hot sun. We pull up to the local *wat*, or temple, which distinguishes each village and are met by a group of monks who welcome us to park our bike on the grounds before we start on our first interview of the day.

The first person we meet is Loak Chen¹, who has been farming in this area for most of his life except for the interlude between 1975 and 1979 when American bombs and the Khmer Rouge regime forced him to abandon his farm. Chen is a serene older man, with graying hair but a firm carriage. His carefree grin reveals a smile with few teeth but welcoming all the same. His general demeanor seems to portend a wisdom of someone who has seen it all come and go. And this may be true, for as Chen reveals, he and his ancestors have through the ages, lived through every type of political and economic regime imaginable, from the monarchical rule of the King, the colonial rule of the French, the American installed government of the Lon Nol regime, the Khmer Rouge regime and their ideas of autarky, the communist regime installed by the Vietnamese after their invasion and most recently the ostensibly democratic regime² set up in

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¹ For reasons of privacy and personal security, all people referred to in this thesis are given fictive names unless otherwise stated, in accordance with Carleton University's Ethics Guidelines for Conducting Research.

Cambodia by the entire world through the UN supervised elections in 1993. Yet, throughout all of these various political regimes neither Loak Chen nor his ancestors have ever been asked what they thought about development or agricultural improvements and yet they remain the subject of furious debate in various reports and projects put together by aid and research agencies around the world. The simple truth of the matter is, that despite the fact that Chen and his ancestors have farmed these lands for hundreds of years (sometimes as sole proprietors and other times as communal groups), they have never been included in the design, planning or implementation of any number of agricultural development interventions which have taken place in their village over the years. The assumption being that professional development experts, know better than farmers themselves what is good for them.

Some months earlier at an academic conference on sustainable agricultural sponsored by the International Rice Research Institute in Los Banos, Philippines³, I recall having met Dr. Joseph Medina⁴, a soil specialist. Medina is an affable older academic, and perhaps more fond of confrontation than most Filipinos. In a cheerful way, Medina sometimes likes to bait the other scientists and development workers from the mainstream

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² The author acknowledges that the current situation in Cambodia, particularly in the wake of events after the July 1997 coup, the claim of a democratic system stretches credulity. However, recent reports out of Phnom Penh suggest that general elections will continue to be scheduled for July 1998.

³ Conference entitled, *Symposium on IPM in Rice-Vegetable Systems: Status, Constraints and Prospects*, PCARRD, Los Banos, October 2-4, 1996. Sponsored by International Rice Research Institute (IRRI), FAO, and PhilRice.

⁴ Dr. Medina did not object to being cited in this thesis.

organizations. As he told me later:

Many times when these experts get together to discuss agricultural problems and identify research priorities I often pose the question: 'Who are the farmers here?' In a group talking about agricultural problems and developing policies for agriculture, I ask the question - without any malice, without trying to offend anybody - 'Who are the farmers here?' Perhaps you will be lucky and there are three or four in a group of one hundred who will say that they are farmers. So what business do we have solving other people's problems, identifying research priorities and developing policies for other people when we don't know their situation?"[FN October 13, 1996]⁵

These words come flooding back to me as I squat, somewhat uncomfortably, on a well-worn straw mat inside Loak Chen's bamboo home listening to him recount his experiences in farming. Just as my legs are about to go numb from lack of blood circulation, Chen rescues me by asking if I want to tour his fields. I readily accept. As we walk outside, he tells us that his fields are actually nowhere near his home and nowhere near irrigation, which means that he only produces one primary rice crop per year and last year it failed to yield sufficient food to feed his family of six. Indeed, a good portion of the village must deal with a rice deficit which extends for almost two months a year. Chen and most of his neighbours are what is described in the literature as resource-poor farmers⁶. Chen has 1.5 hectares of land, following the privatization of land in 1989-90, and this land is further separated into three plots spread throughout the village in different locations. On our way to the nearest plot I ask Chen, through my translator, if he

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⁵ These notations throughout the thesis denote Field Notes. They represent direct quotes, or material derived from interviews, gathered by the author during field work.

⁶ A resource-poor farm family is defined as one "whose resources of land, water, labour and capital do not currently permit a decent and secure family livelihood" (Chambers and Ghildyal, 1985:3).

has heard of the new sustainable agricultural project underway in the adjoining village. He tells me that he hasn't and adds that he isn't much interested in what they have got to say anyway.

If they want to help us, they should just give us better fertilizers because we are poor farmers and cannot afford to buy as much as we need... but now they [agricultural extensionists] don't give us anything. They just tell us: 'you must use this fertilizer' or 'you should use this type of seed if you want better yields'. Of course, everyone wants better yields but nobody has the money to buy what the extension agent suggests. They are like ghosts (*neak ta*). They come out of nowhere and then they disappear without a trace... and we are left with nothing⁷ [FN February 13, 1997].

It was precisely this above view of extension which proponents of a new agricultural extension program in Cambodia were hoping to counter with a recently instituted National Integrated Pest Management (IPM) Program sponsored by the United Nations Food and Agriculture Organization. The initiative seeks to involve farmers more in the agricultural extension process, having them carry out individual experiments and learn from them by themselves so that they could improve their own farming techniques. Essentially, the strategy tries to involve resource-poor farmers in their own development with an emphasis on making farming a sustainable activity.

Such a strategy raises many questions for social scientists. At a practical level, is what the National IPM program proposes even remotely possible? Can these relatively unschooled farmers be expected to be responsible for their own learning and

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⁷ This reflects the contrast of previous occasions when extension agents from France (1960's) and the Soviet Union (1975-89) had left villagers with a free supply agricultural inputs (seed, fertilizer and pesticides).

development which will lead to real improvements in their lives? Will the strategy result in making a real lasting effect in the community or will the initiative dry up, like the wet season floods, once the development agents have left the field?

For reasons that will become clearer in the pages that follow, I believe that the National IPM-FFS program represents a potentially viable challenge to mainstream agricultural extension in Cambodia. On the surface, at least, it acknowledges and values the experience of resource-poor farmers like Loak Chen and recognizes the importance of having farmers actively participate in their own development. The IPM approach also signals a move towards more sustainable forms of agriculture in seeking to reduce costly external inputs which are often detrimental to the environment and people's health. For these reasons alone, I believe that this development project, being instituted in individual villages across Cambodia by the IPM National Team, is worth studying. Loak Chen is not alone in his disparaging views of traditional agricultural extension interventions in Cambodia. It remains to be seen, however, if the approach embraced by the IPM National Program will differ sufficiently to counter the views held by farmers like Loak Chen. However, before we turn our attention to this question some conceptual orientation is required.

1.2 What's So Special About IPM?: The IPM-FFS in Cambodia

The Integrated Pest Management (IPM) - Farmer Field School (FFS) program in Cambodia is an initiative meant to accelerate the creation, application and

implementation of alternative crop protection strategies in Cambodia. In 1993, the Ministry of Agriculture, Forestry and Fisheries (MAFF) expressed support for an environmentally friendly approach to pest management and worked with the FAO to develop a National IPM Program.

The initiative is designed to encourage local involvement and participation in developing appropriate crop protection strategies through the use of farmer field schools. The FFS model, developed by the FAO Intercountry Program for IPM in Rice, was adapted to suit field conditions in Cambodia. The model focuses on equipping the farmer with monitoring, analytical and decision-making skills. It is a field based program emphasizing crop management practices with the aim of making farmers experts in their own fields. The training program is structured so farmers are taught processes to solve field problems, ensuring self-reliance and sustainability for agricultural development.

1.3 Thesis Statement

This thesis is a study of three villages in the district of Svay Teap, Cambodia which evaluates the IPM-FFS approach to agricultural extension. Particularly, this thesis will explore **whether the IPM-FFS extension model has succeeded in empowering farmers to promote the long term sustainability of agriculture in Svay Teap.** The thesis focusses on analyzing IPM extension experiences from a village level perspective. The following sections will serve to highlight some of the major assumptions which guide the analysis of the research question itself. These sections will illustrate that

agricultural extension initiatives which aim to promote sustainable development, must view the resource-poor farmer as an essential part of the solution, not as part of the problem, as is so often the case with conventional agricultural extension approaches. Moreover, it argues that sustainable agricultural interventions must integrate the voice of the poorest individuals into projects, and incorporate mechanisms to encourage farmer participation, empowerment and decision-making throughout every aspect of the project.

This thesis is a culmination of a several ideas and issues including; adult education, extension methodologies, community development, the environment, sustainable agriculture and theories on project implementation. It evolved out of my personal interest in agricultural development issues. I am deeply concerned and alarmed at the manner in which agriculture is continually marginalized within the development discourse as being little more than a 'stage' of national development - as a stepping stone before progressing towards a fully industrialized society. This has invariably led to the formulation and implementation of agricultural programs and policies which have been inadequate at addressing the long term sustainability of agriculture and sustainable livelihoods.

The aim of this thesis is to make a modest contribution to the literature related to development in general and agricultural extension and research in particular, through an examination and assessment of the IPM-FFS implementation strategy applied in villages in Southeast Cambodia. The goal is to shed some light on the project's success and illuminate areas which may need to be improved. It is a case study, and while

comparisons may be made with findings in other areas, the scope of the study does not allow for broad generalizations across the National IPM Program's operations. The thesis focuses on site-specific data and aims to deliver useful information for extension program implementation by pointing out specific linkages and effects, and by emphasizing existing diversity both within and among farming communities.

Chapter II

Conceptual Framework

2.1 Introduction

The introductory chapter began with a narrative to help illustrate several of the main points to be made in the pages that follow. Among them:

- if we are interested in improving agriculture in Cambodia as elsewhere, we need to look broadly at agriculture considering social aspects of rural communities not just technical fixes aimed at increasing yield capacity.
- if development interventions are to be 'successful' they must include and involve the people who are meant to benefit from these interventions. Accordingly, people must actively participate in their own development.
- that the conceptualizations of farmers as being 'backwards', 'irrational' and glued to 'traditional' ideas, which guide much of social science theorizing are erroneous and detrimental to agricultural development.
- that the ideas of 'sustainable development' and farmer empowerment are inseparable and that any empowering process in itself is inherently political.

The purpose of this chapter is to delineate the assumptions which have guided this analysis of the National IPM program in Cambodia. Section 2.2 will critically examine the narrow conceptualization of farmers and the rise of development theory which has served to justify outside intervention in agricultural development. In section 2.3, I will argue for the need to reconceptualize the image of the peasant farmer and demonstrate that the farmer can make important contributions to agricultural development. This section will explain the need to use a more holistic approach in agricultural development projects and explains the importance of incorporating farmers' needs and knowledge into agricultural interventions. The concept of sustainable agriculture is examined in

section 2.4, where it will be argued that the development of agriculture must be linked to the development of individual farmers if it is to be truly sustainable. Section 2.5, continues this theme, making the case that sustainable agriculture and farmer empowerment are inextricably linked, where sustainable agriculture is situated within the context of the development process, where people are empowered to lead economically productive and social satisfying lives. This section also reveals that there are potential difficulties in interpreting farmers' voices, primarily because farmers are not a homogenous group. The section concludes with a chapter breakdown which describes the structure of the rest of the my analysis of the IPM-FFS model in Cambodia.

2.2 The Conceptualization of Peasant Farmers

Interventions and strategies aimed at improving agricultural production in the South must be understood within the overall context of development theory as it has evolved over the past five decades. After all, it is the manner in which development is conceptualized, which gives rise to the 'understanding' of the poor that explains, facilitates and justifies such massive interventions into the lives of farmers in what has been termed the "Third World". Agricultural interventions targeting peasant farmers have historically been premised on a narrow conceptualization and understanding of their perceived needs and capacities. These perceptions can be traced directly to the philosophical underpinnings incorporated within development theory as a whole.

The rise of development theory is often associated with Marx who gave the word much

of its contemporary meaning. Hegel had conceived history to be the "development" of the human spirit. Marx was the first to take the term and apply it to economics. As *Das Capital* reveals "the country that is more developed industrially only shows, to the less developed, the image of its own future"(Marx, 1976:91). However, it is important to stress that Marx's definition still differed from contemporary usage. Development was never a project which was intentionally introduced. As Lummis describes, for Marx, development had no conscious author but rather an unconscious agent - an unintended consequence of the bourgeoisie's quest for profits (1994: 37).

It was only in contemporary usage that 'development' has been transformed from a process to a project - from an intransitive to a transitive verb. The advent of the Cold War influenced US foreign policy decisions to take an active interest in 'developing' other countries in order to reduce the spread of communism in much of the Third World. On January 20, 1949, President Harry S. Truman articulated the new US policy in a speech and popularized the term - *underdevelopment*. "We must embark on a bold new program for making the benefits of our scientific advances and industrial progress available for the improvement and growth of underdeveloped areas" (cited in Lummis, 1994:43). Development was now a conscious project of the industrialized countries meant to transform societies primarily in the Third World and cure the malaise called 'underdevelopment'.

Arturo Escobar (1988) somewhat arbitrarily traces the beginning of what might be called

"the age of development" to a 1949 World Bank Mission to Colombia. The Colombia Mission, which included fourteen "international experts" in the fields of industry, agriculture, banking, transportation, had as its goal not to institute a radical new order in Colombia, but rather the modification of an existing social structure through a "multitude of improvements and reforms". Only through "a generalized attack on [problems in] education, health, housing, food, and productivity can the vicious cycles of poverty, ignorance, ill health and low productivity be decisively broken," according to the World Bank. "But once the break is made, the process of economic development can become self-sustaining" (Escobar 1988:429).

Such a manifesto for development is commonplace today, but at the time it represented a radically new approach in the manner that the industrialized North perceived and interacted with the non-industrialized South. Escobar argues convincingly that the most significant product of the mission was not economic development (whatever that might be taken to be), but the validation of a new, emergent conceptual scheme called "development". Henceforth, development became the dominant problematic through which to analyze, and judge the South. Through the lens of development, poverty, disease, and "low productivity" could be seen as being symptomatic of a disease called "underdevelopment". Nations of the "Third World" (as those suffering from the disease were soon labeled) were presumed to universally share a common set of problems, solutions to which, were embodied in the practices laid down by theorists and technocrats of the new discipline of "development".

In deconstructive terminology, development forms a "dominant problematic" or "interpretive grid" by which to "know" poor countries - and to justify intervention in them. As Ferguson has described the process:

Within this interpretive grid, a host of everyday observations are rendered intelligible and meaningful. Poor countries are by definition "less developed," and the poverty and powerlessness of the people who live in such countries are only external signs of the underlying condition... Within this problematic, it appears self-evident that debtor Third World nation-states and starving peasants share a common "problem", that both lack a single "thing": "development" (Ferguson 1990:xiii).

Assuming that the historical economic progression of the West could be duplicated elsewhere, development theorists prescribed a series of specific recommendations which promised that with enough capital, education, infrastructure, and the like, the evolution of a 'modern' society would progressively unravel itself. This model of evolutionary economic and social change was captured in what has since become the authoritative work of modernization theory; W.W. Rostow's (1960) *The Stages of Economic Growth*. Rostow suggests that development occurs in a sequential fashion, in clearly definable stages. Essentially it held that as a poor nation steadily acquired necessary components of economic growth from richer ones it would progress up the development ladder.

Furthermore, according to Rostow, the process of modernization involved not only capital improvements (eg. better transportation, communication), but more importantly *a transformation in the attitudes of the people towards technology and change*. Erstwhile traditional people (peasant farmers) would be awakened through education and political-economic interventions (development), to the possibilities inherent in technological

innovation. Indeed, in the modernization paradigm, it was the 'traditional' and 'backwards' attitudes of people, such as the peasant farmer, which presented the greatest obstacle to development and stalled progress. It is this widely held view of the peasant farmer which informs much of the debates about development and leads to particular political and economic consequences for farmers.

While modernization theory was quickly embraced by policy makers and bureaucrats as a guide to what constituted proper development, qualifications, criticisms and alternative perceptions were put forward almost immediately.

Neo-Marxist critiques of modernization such as the dependencia theory of Andre Gunder Frank (1969) or Immanuel Wallerstein's (1974,1980,1989) "world-systems" theory, explain underdevelopment as a product of unequal exchange between dominant "core" nations, principally the industrialized West, and weak states of the "periphery". In the colonial era, they assert, the core amassed wealth through unequal extraction of raw materials and cheap labour from the periphery (and continues to exploit the periphery through various neo-colonial means, including a near monopoly on high technologies). In this view, it is argued that World Bank-style development or development sponsored by foreign multinational companies may actually serve to increase underdevelopment through the exploitation of cheap Third World labour, the encouragement of dependence on foreign technologies, the repatriation of profits, and the obliteration of indigenous technologies and industry. In sum, dependency theorists say rich countries are rich

because other countries are poor.

As dependency theorists point out, modernization tended to ignore the difficulties faced by poorer countries in competing with already established industrial powers. Nations are portrayed as autonomous actors, rather than part of a historically constituted larger world economic system. Economic stratification within countries also received scant attention from the modernizationists (except when trying to identify the "early adopters" and "laggards" of Rogerian adoption-of-innovation theory, which was itself tied closely to modernization). Finally, the critics pointed out, modernization has failed on its own terms, and despite a handful of economic success stories - Japan and "semi-peripheral" middle level economies like Korea, Taiwan Singapore and Hong Kong - global inequality has in fact increased throughout the world.

Despite these criticisms, it is important to note that these criticisms were made in search of alternative *styles of development* - not as outright rejections of the practice of development itself, in some form. Neo-Marxists for instance often proposed indigenous development based on protective tariffs, import substitution, and use of local materials. For their part, many social scientists working within the neo-modernizationist paradigm have taken the position that development is something that can be done successfully and with some regularity, if only particular, local conditions and cultural idiosyncrasies are taken into account - although apparently well-conceived projects still manage to fail, even in their own terms, with astonishing regularity (See Ferguson, 1990).

Whatever the development paradigm that is advocated, one constant remains, on both the left and the right, development is seen as the cure for the new disease of 'under-development' - a term unknown a generation earlier. Despite the long-term assault on Rostovian theory by a variety of critics, modernization-type approaches continued, and continue to thrive in various guises. A stark focus on per-capita gross national product is replaced by more euphemistic phrases like "basic human needs" but the idea of successful development still appears as a kind of holy grail of perfection. As Ferguson writes,

If "development" is today from time to time challenged in the name of "*real* development". Like "goodness" itself, "development" in our time is a value so firmly entrenched that it seems almost impossible to question it, or to refer it to any standard beyond its own (Ferguson 1990:xiv).

The aim here is not primarily a debunking of particular elements of modern development theory. Rather it aims to explain why such notions of development, applied to farming, persist so powerfully and demonstrate how this understanding of development has influenced the conceptualization of farmers within the development problematique.

The conceptualization of the peasant farmer is critical to the present study, because it is based on this conceptualization that development specialists and policy makers are able to explain to their satisfaction several fundamental factors including; (1) why peasants are not 'developed' (ie. why they are not like us); (2) why they seem so often to resist development; and perhaps more importantly (3) how they may, with enough outside intervention, eventually become 'developed'.

The image of peasants as 'backwards traditionalists', is, of course, closely intertwined with modernization theory. In this view, the main thing wrong with peasant farmers is that they are not "more like us". When farmers resist a development project without reason (or at least without "good" reason) this image of the peasant supplies an explanation. They are simply too "traditional", "backwards", "irrational", "ignorant", or "illiterate" for their own good. When this view monopolizes development discourse as it often does, the remedy requires that "traditional" farmers receive a "proper" education in the ways of the modern world, and incorporation into the larger society. Presumably, if peasants can be shown the benefits of science and modern attitudes, they will no longer be anti-modern, and will therefore be better able to "develop" economically, and to help their country do so as well.

Enthusiasm for this modern 'scientific management' was not restricted only to the business of development. This scientifically influenced philosophy of rationalism was the hallmark of the 1960s and 70s, from the 1969 moon landing to the Green Revolution in agriculture launched by Norman Borlaug and his associates. The widespread conviction was that with the right dose of determination and new technology, any problem could be solved. Certainly on the surface there was some reason for this eternal optimism stemming from the perceived limitless benefits of western science and technology. During the 60s and 70s while some Third World Countries were facing starvation - the developed West was enjoying bumper crops. Therefore, the basic assumption of development was that all that was required was simply to transfer the large backlog of

scientific information and technologies which were stockpiled, ready to be 'transferred' from the scientifically advanced North to the poor farmers of the South (Rhoades, 1989).

As a result, the skills and indigenous knowledge⁸ of peasant farmers has often been ignored or considered inferior by development experts or 'outsiders' reinforcing the marginalization of their capacity and knowledge in development interventions (Warren, 1993; Farrington, 1988). This situation is evident within the context of the Green Revolution and other rice production intensification campaigns in Asia where agricultural development was dominated by a linear way of thinking which resulted in the predominance of the transfer of technology model (Chamber and Ghildyal, 1985). The technology transfer model generated circumstances where information generated by scientists on research stations is transferred in a sequential process through extension to farmers (Rhoades, 1989). In this light, technology (or western scientific knowledge) is seen as a commodity to be delivered to farmers and poured into the "empty vessels" of local knowledge systems. The aim is for maximum returns through state-of-the-art technology and high input use (Kaimowitz, 1990; Roling, 1991). In this model, farmers are not regarded as capable experimenters or technology developers but merely as passive recipients of technology (Reijntes et al, 1992).

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⁸ The term indigenous knowledge is synonymous with "traditional knowledge", "rural people's knowledge", and "local knowledge" when describing to the knowledge of farmers.

In terms of agricultural extension, this has resulted in a model for rapid dissemination of Green Revolution technologies which focussed on transferring technology and knowledge in a unidirectional, 'top-down' manner to the peasant farmers (Griffin, 1989). In many cases, governments and development agents enforced strict adherence to the recommendations stemming from the central scientific stations. This neo-colonial attitude of 'enlightening the savages' can be found in a translated excerpt below, showing clearly the attitude of superiority among outsiders, who think that they convey valuable, innovative recommendations, and the indifferent attitude of local farmers towards these recommendations which are not relevant to their current objectives and habits.

We, the ethicists, and activists, who wanted to make the farmers rich and wealthy at all costs, we in particular are the ones who are distrusted! [...] I had them plant coconut and cassava and coffee and tea and pepper; I provided them with water and roads; I had them plant rice in rows; only for them I searched for wisdom in many books. [...] The only result was that they beat their drums like crazy in celebration at the time I left, relieved that they got rid of such a tiresome fellow. (Rolings and Van de Fliert, 1991:14)

The above quotation reflects many of the conditions and attitudes held of agricultural extension during the Green Revolution. Farmers were paternalistically lectured at, coerced, and punished for non-compliance as development was determined to demolish the "tradition-bound peasant".

Initially, dramatic increases in per capita cereal output in countries such as the Philippines, India and Pakistan seemed to confirm the benefits of this scientific development model (Rouse, 1996). But doubts soon emerged. Follow-up studies

indicated that while productivity gains were significant, the prime beneficiaries of the Green Revolution were rich farmers with large plots of land while resource poor farmers were left essentially untouched. The exacerbation of inequalities as a consequence of the Green Revolution methods are confirmed by various studies and researchers (Wolf, 1986; Glaeser, 1987; Griffin, 1989) Some have even questioned the apparent increase in productivity suggesting that in fact, total agricultural productivity actually decreased (Jones and Wallace, 1986 cited in Goodman, 1989). While casting judgement on the Green Revolution remains a popular theme for students of development, this is not the focus here and its analysis lies outside the scope of this present paper. Instead, our interest here lies in understanding the consequences of agricultural interventions which were premised on the 'conceptual fact' that peasant farmers are irrational beings and need to be enlightened by 'development'. Generally, the assumption was made that all that farmers lacked, were the proper scientific tools to improve their farming and their lives. However, despite the widely heralded successes of the Green Revolution in increasing aggregate crop yields, scientists still had difficulty in understanding why some state-of-the-art scientific methods developed on the research station were not being applied by all farmers. Notably, resource-poor farmers were being by-passed by Green Revolution technologies which exacerbated issues of poverty alleviation in rural areas (DeWalt, 1994). Furthermore, some critics of these new high-input technologies were claiming that they may be damaging to the environment and patently unsustainable (Commoner, 1971; Conway and Pretty, 1991) . The perceived failures of the Green Revolution to address issues of poverty alleviation and agricultural sustainability, have caused many

experts to re-examine the assumptions highlighted above concerning the ability and capacity of resource-poor farmers.

2.3 A Reconceptualization of Peasant Farmers

The prevailing theory within the dominant transfer of technology paradigm was that research station technologies were superior to farmers practices since they perform better in field tests with standardized inputs. Therefore, all that was required was to get the technology adopted by a few "progressive" farmers and then this information or technology would filter down to the smaller more backwards farmers as they were enlightened to the potential benefits which could be realized (See Rogers, 1969).

However, when this failed to materialize, and the technologies were only spread among the better off or wealthier farmers, questions began to emerge with respect to this trickle-down technology diffusion model. While many continued to blame this phenomenon on the conservatism of poorer more backwards peasants, others argued that the failure of farmers to adopt certain technologies had less to do with farmer conservatism than with the inappropriate design of the technology as related to the farmers' own ecological and socio-economic conditions. These conditions were especially relevant to the situation of resource-poor farmers.

The conventional conceptualization of the 'irrational peasant farmer' was placed increasingly under scrutiny by some researchers. Despite the fact that various studies by

development economists over the last 50 years have sometimes characterized Third World farmers and their knowledge system as backwards and inefficient, there started to emerge a growing evidence that this view was inaccurate. As Michael Lipton notes in his essay "The Theory of the Optimizing Peasant",

Peasant conservatism is out. Economists of underdeveloped countries are beginning to realize that the farmer is no fool. (Lipton, 1968:327)

A number of authors began to support this view, arguing that far from being irrational and fatalistic, peasant farmers are efficient economic agents who scrupulously weigh the marginal cost benefits associated with different agricultural methods and techniques (Schultz, 1964; Eicher and Staats, 1984).

While this above view is still not universally accepted it is growing in influence and has resulted in some researchers beginning to examine the opportunities and constraints which influence farmers' perceptions and strategies concerning agricultural technologies. The broader conceptualization of peasant farmers made it possible for researchers to re-examine many of their assumptions and led to a situation where researchers began to go to the fields in order to understand the rationales underlying some of the farmers' erstwhile "irrational" practices.

It was only when researchers went to the field that they started to realize that peasant farmers in fragile environments were devising various farming strategies, of which maximization of yield was only one component. Indeed, many farmers were often more

concerned with reducing their vulnerability to risks in order to ensure that they get at least some modest yield no matter what the unpredictability of climate and other factors.

The transfer of technology approach which was an essential component of the Green Revolution strategy was developed at a time when the problem of poverty and hunger was viewed primary as a consequence of lack of production (Rouse, 1996 ; Chambers and Ghildyal, 1987). Therefore, the logical response was simply to grow more food. However, as the work of Amartya Sen (1981) demonstrates, famines and food shortages result much less from the shortages of the food supply, than from the lack of means to grow it or to buy it. Accordingly, various authors have called for a re-prioritization of research and extension techniques to address issues of the vulnerable resource-poor farmers to enable them to increase their own production while minimizing risk (See Castillo, 1996; Altieri, 1983; Biggs, 1995). IRRI rice scientist, M.S. Swaminathan suggests the future depends on it. While support continues to grow for greater emphasis on agricultural research which benefits resource-poor families on fragile lands⁹, it is widely recognized that this will require more information on context-specific factors affecting the daily lives of farmer's in their communities.

The transfer of technology approach which emphasized simple and high external input technology packages did not meet the needs of resource-poor farmers and the complex,

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⁹ According to estimates there are approximately 1.5 billion people, or over a quarter of the entire population, who depend on resource-poor/ small-scale agricultural production: (Scoones and Thompson, 1994)

risk-prone diversity of their farming systems nor did this model address their poor access to resources. Richards (1989) notes that for resource-poor farmers each season requires its own adaptive performance, depending on unpredictable weather and specific events affecting the household's resources. Therefore, different solutions will be required to meet the various needs and priorities of these farmers depending on their specific social-economic, political, cultural and ecological circumstances. Farmers residing in different areas or even within the same region may have very different and distinct priorities, yet these needs and priorities must be addressed if there is to be any success recorded among resource-poor farmers.

Initially researchers responded to the new context specific research agenda using a farming systems approach, whereby experiments were carried out both at the research station and on the farmers' fields. The farming systems research approach evolved in a response to address the poor adoption rates among resource-poor farmers. The on-farm research was seen as a complementary function to the more traditional research approach which would allow for more specific recommendations to farmers and better inform scientists of the farmers' research priorities for technical investigation (Collinson, 1985). While this approach is necessary, it was still inadequate in developing an understanding of how context-specific relationships among political, social, economic, cultural and ecological issues interact with agricultural development. A more holistic understanding of agricultural development which views it as an integrated social process not only a technical operation must inform the approach of agricultural development. But how?

According to Titilola (1990) one of the major deficiencies in the development of agricultural research and extension has been the failure to incorporate local knowledge in their design and implementation. Agricultural development assumed a linear process starting with a breakthrough at the international level and ending on the farm with an adapted innovation (Kaimowitz, 1990). The FSR approach encouraged scientists to take their research to the fields and apply it, but it still usually resulted in scientists themselves determining priorities and generating standardized technologies to transfer to the farmers (albeit resource-poor farmers). The extent of the local farmers' participation was usually limited to adoption.

The principal idea behind incorporating local knowledge into the agricultural development process was to better understand farming systems and their constraints which are relevant from a farmer's perspective and to examine how farmers themselves can contribute to agricultural development. Local knowledge was seen by some as an important factor in agricultural development, but this idea was not universally embraced. Indeed, to many the idea that local farmers had anything to contribute to scientists was virtual heresy (Rhoades, 1989). Yet as Kojo et al. reveal this view tends to ignore the historic achievements of farmers.

For thousands of years farmers have been adapting crops to diverse environments and experimenting with and developing new varieties. The interaction between people, the environment and their food crops has provided the world with a wide range of crops and a remarkable diversity of varieties within single crops... These interactions have also resulted in a human capacity to further develop crops through a process of continuous adaptation and experimentation (Kojo et al., 1993).

Eventually, many researchers recognized that technology diffusion was not a one-way process and that they too, had much to learn from the farmers. Research and extension was now viewed as a continuous process, in which interactive research and evaluation of on-farm technology by farmers played a crucial role in influencing technology development and adoption. As Rhoades and Booth (1982) contend,

...[S]uccessful agricultural research and development must begin and end with the farmer. Applied agricultural research cannot begin in isolation on an experimental station or with a planning committee out of touch with farm conditions. In practice this means obtaining information about, and achieving an understanding of, the farmer's perception of the problem and finally accepting the farmer's evaluation of the solution.

This paradigm shift, as it was hailed, soon became known as the *farmer first* approach.

The basic philosophy of the farmer first approach differed from the previous transfer of technology model in several important ways:

- research process starts with the perceptions and priorities of the local farmers first, not the perceptions and priorities of scientists.
- scientists form an understanding of the situation of the resource-poor farmers - their resources, needs and problems.
- research and experiments are concentrated in the field not in the research stations. The research station has a secondary role of consultancy and reference.
- Non-adoption of technology is no longer explained as a failure of the farmer or farm level conditions but as a failure of the technology or practice itself.
- The measure of excellence is not judged on purely scientific rigour or research station crop yields, but on the criterion that the new technology or practices are spread and used by resource-poor farmers themselves (Chambers and Ghildyal, 1987).

The farmer first approach suggests literally that all research and development

intervention begin with the farmers themselves in helping to define the research priorities and participating in the analysis and experimentation. The conceptual reversal implicit in the farmer first model seeks to overthrow the conventional paradigm where notions of knowledge (and therefore power) were the exclusive reserve of outsiders (scientists, teachers and extensionists). Farmers had previously felt excluded from a process that was aimed at them and 'failed' to implement expert recommendations. By including the resource-poor farmer in the process from the beginning it was hoped that they would be more inclined to participate in innovations and implement new methods and technologies designed by both themselves and scientists. In essence, this required that the balance of power dominated by outsiders be transferred to insiders (farmers) in order to unlock the potential of their local knowledge and lead to a more sustainable path of agricultural development.

2.4 What is Sustainable Agricultural Development ?

During the past decade, the concept of "sustainable development" has become an increasingly pervasive one, in most areas of life including agricultural development. Despite the widespread usage of this concept , there has been little agreement on a precise and absolute definition of sustainability itself. Indeed, according to one author, there have been more than 70 definitions assembled (Pretty, 1995) each one emphasizing different values, priorities and goals. The archetypal understanding of sustainable development comes from the Bruntland Commission in 1987.

Sustainable development seeks to meet the needs and aspirations of the

present without compromising the ability to meet those of the future (Bruntland Commission, 1987:40).

Whatever the definition, the concept clearly brings together the often contrasting elements of environmental sustainability and human development and signals a new way in which to view the world with regard to resource depletion and development. It captures within it an understanding which recognizes that while development must continue to address the needs of humanity, it must do so using sustainable means if it is to allocate resources in a responsible manner which will meet future needs. The need to adopt a "sustainable development" agenda stems from the environmental crises of continued resource degradation and the developmental crises of increasing poverty which together form an interconnected global crisis. The crisis is quickly reaching a scale where it threatens the health of the entire planet and will increasingly thwart efforts of human development (Redclift, 1987).

Perhaps the most important insight stemming from the concept of sustainable development is the understanding of the interlocking nature of the crises; namely the linkage of social concerns with environmental concerns. We cannot save the environment without attention to development and we cannot continue to develop without a focus on preserving the environment for future generations. It is from this context that we can begin to examine the concept of sustainable agriculture.

The achievements of agriculture over the last five decades have been notable in

manifesting necessary increases in per capita food production for developing countries (Conway, 1985: 32) However, these achievements have often been realized at a significant cost to the environment and human health (Conway & Pretty, 1991: Dinham, 1993). Conventional agricultural development emphasizes intensive farming methods and high external inputs such as the use of chemical pesticides and fertilizers as a mean to bring about increased food production. Consequently, these methods often cause serious risk to both farmers' health and the environment. These problems include the contamination of groundwater by pesticides, nitrates, and animal wastes, causing harm to wildlife, disruption of ecosystems and potential health risks in drinking water.¹⁰

Notwithstanding the environmental implications, modern agricultural technologies also help draw a wedge between the rich and poor in many societies. Whereas the better-off farmers and land owners are able to reap significant benefits from the application of new technologies, resource-poor farmers cannot afford expensive external inputs and become increasingly marginalized. The political-economic circumstances of the poor in these conditions forces them off their land and drives them to engage in farming techniques and activities on fragile lands which are deleterious to the environment and their own futures. They are compelled to do this in order to ensure their own short-term survival.

The relationship between the conditions of poverty and environmental degradation is

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¹⁰ The WHO estimates that there are over three million cases a year of acute pesticide poisonings which result in some 20,000 deaths a year, mostly in the Third World. (Jeyaratnam, 1990)

complex. Poverty has a direct impact on the environment, while the environment has a direct impact on the poor. As the Bruntland Report reads;

...sustainable development requires meeting the basic needs of all and extending to all the opportunity to fulfill their aspirations for a better life. A world in which poverty is endemic will always be prone to ecological and other catastrophes (Bruntland Commission, 1987:8)

Poverty entails a vulnerability and lack of security among the poor to meet their basic needs. Where poverty, human suffering and desperation exist among the poor, there is a greater possibility of unsustainable resource use and environmental degradation. In light of this relationship, many authors have advocated an approach which starts with the lives of the poor themselves in this cause and effect linkage. Central to this approach is to focus on creating sustainable livelihoods. Chambers and Conway define sustainable livelihoods as follows:

A livelihood comprises the capabilities, assets, (stores, resources, claims and access) and activities required for a means of living; a livelihood is sustainable which can cope with and recover from stress and shocks, maintain and enhances its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contribute net benefits to other livelihoods at the local and global levels in the long and short term.

The ability of resource-poor farmers to make their lives more sustainable is usually constrained by their own lack of resources. If they had adequate resources, the argument follows, they could afford to purchase external inputs and increase food production. However, this still does not address the environmental damage caused by these high external input technologies which may threaten livelihood opportunities for the next generation. An alternative approach which encompasses this issue seeks to develop

agriculture in a more environmentally beneficial manner. Low external input and sustainable agriculture (LEISA) refers to agricultural technologies and techniques which minimize external inputs and optimize the use of locally available resources. Although external inputs may still be used the emphasis is on combining different elements of the local farm system to produce a complementary effect (ie. combining food waste and soil to form compost to increase soil fertility). External inputs are used only if they are needed to provide elements that are deficient in the natural ecosystem or to enhance available resources. Essentially, this concept of sustainable agriculture is characterized by a greater use of local resources and shifting the initiative to rural people themselves so that their knowledge becomes an important resource in agricultural development and resource management.

It is also important acknowledge the role of gender in sustainable agricultural development and recognize the substantial contribution of rural women to food and agricultural production. The advancement of women is central to achieving sustainable development. Women are responsible for natural resource management through their day-to-day productive and reproductive tasks of providing fuel, water and food for the household. However, they are rarely in a position to influence decisions that determine the allocation of resources and, hence, the sustainable use of land and water. Women have learned ecologically sustainable methods of agriculture and have acquired extensive knowledge about genetic diversity. If they are denied partnership in development, this knowledge is lost.

Sustainable agriculture does not seek maximum production over the short term but rather "stable and adequate production over the long term" (Alders et al., 1993:3). The goals of sustainability in agriculture imply the following: (Pretty, 1990; Alders et al., 1993)

- agricultural development will maintain, and where possible enhance, natural resources and make the optimal use of natural processes.
- the need for close monitoring and careful management of the agroecosystem to achieve a balance of high level production.
- a greater and more equitable access among farmers to productive resources and opportunities, and progress.
- a socially just form of agricultural development which places the needs and priorities of the farmer first.
- a greater incorporation and productive use of local farmer knowledge and practices in agricultural research and development.
- a thorough integration of natural processes such as nutrient cycling, nitrogen fixing and pest-predator relationships into agricultural production.
- an increase in self-reliance among farmers and greater farmer led experimentation.
- efficient production with an emphasis on integrated farm management, and greater attention towards water, soil and biological resource conservation.

It is important not to view sustainable agriculture as a throw back to a more 'traditional' and 'backwards' form of agricultural. On the contrary, sustainable agricultural practices may apply many modern and innovative technologies and techniques. Indeed, whereas conventional high external input agricultural development remains capital intensive, sustainable agriculture development is knowledge intensive - where detailed ecological knowledge of the land is used in the pursuit of various agricultural development goals.

The concept of sustainable agriculture as presented here complements the reprioritization of resource-poor farmers in the preceding section which called for a farmer first approach to agricultural development and extension. The emphasis in sustainable agriculture is also concerned with the interests and needs of resource-poor farmers and maintains that agricultural development should concentrate on providing farmers with sustainable livelihoods based on locally available resources including local knowledge.

2.5 Sustainable Agriculture and Farmer Empowerment: Making the Link

The previous sections have underscored the significance of two important elements. First, the peripheral role of resource-poor farmers in the agricultural development process has often resulted in a failure to take account of the complex network of factors affecting agriculture, and has resulted in research and extension programs which are inadequate in addressing the needs and priorities of resource-poor farmers. Second, issues of poverty and low social status often lie at the root of agro-environmental problems. Therefore, sustainable agriculture must address these issues concomitantly with ecological and environmental concerns if it is to be associated with successful interventions. What these two points illuminate is the growing recognition of the inseparability of sustainable agricultural development issues and resource-poor farmer empowerment. Farmers must be empowered if we are to improve sustainable agricultural and research and extension strategies.

2.6 Implications for the IPM-FFS Analysis

The above sections have illustrated a number of points relevant to the case study analysis. They suggest that successful agricultural extension interventions, which aim to promote sustainable development, such as the IPM-FFS program, must reconceptualize the role of peasant farmers, and recognize them as being knowledgeable and valuable partners in any agricultural development process. In brief, they are part of the solution not part of the problem, as they have previously been viewed in the hitherto dominant modernizationist paradigm. It is clear that farmers must be stakeholders in their own development and farmer participation, empowerment and decision-making must be included at all levels of the intervention, thereby influencing the design, implementation and outcome of the agricultural development process. These observations will have all served to inform my research question which seeks to measure the capacity of the IPM-FFS model to empower resource-poor farmers in promoting sustainable agriculture in the Svay Teap, Cambodia.

The remainder of this thesis is divided into six chapters. Chapter 3 lays out the context of agricultural development and extension in Cambodia and offers a description of IPM as well as IPM training methodologies. Farmer participation is the focus of chapter 4. Participation is often viewed as a panacea to attain many achievements in sustainable rural development. This chapter will examine this precept. Chapter 5 provides the methodological framework which guided the fieldwork in Svay Teap, and describes the research process as it unrolled. Chapter 6 constitutes the analysis of the IPM-FFS

Program as applied in the study area. It explores the local level responses to the IPM-FFS intervention in Svay Teap once the extension agents have left the field. Finally, chapter 7 will present conclusions following the case study analysis which will discuss future implications for the IPM-FFS intervention.

Chapter III

Agriculture, Extension and Development

3.1 Introduction

This chapter aims to lay out the broader context determining agricultural development in Asia and Cambodia in particular which will inform the case study analysis of the FFS extension model, a strategy to accelerate implementation of IPM practices in rice.

Section 3.2 presents a historic overview of the evolution of Cambodian agricultural development from its early history to the present, highlighting the factors which have influenced agricultural development in the past and which will continue to influence its future. This will enable the reader to contextualize the issues associated with agriculture and development in Cambodia and illustrate some of the issues confronting contemporary agricultural extension interventions. Section 3.3 surveys agricultural extension models in Asia and Cambodia and describes some of the problems encountered with conventional extension systems and explores some alternative extension approaches. In section 3.4, the ideas behind IPM are examined, as well as its particular extension strategy. This section will situate IPM within the context of sustainable agriculture and describe the goals and implementation strategies of National IPM program as it is being applied in Asia and Cambodia.

3.2 Agriculture and Development in Cambodia

Rice cultivation probably began in Cambodia as far back as the 1200's. Long before modern scientists, Cambodian farmers utilized the natural viability of rice obtained from

wild species, natural hybrids and seeds imported by travelling traders through the saving of seeds from superior plants. Because of its well established history in the region, rice has taken a central place in the daily life of most Cambodians. If available and affordable it is a staple of every meal. Rice is also revered in many religious ceremonies within the Buddhist religion in Cambodia where offerings of rice to spirits are commonplace. It is also a major element in many legends and traditional beliefs. While the central position of rice within the society has remain unchanged over the years, the conditions and approaches under which farmers cultivate rice, have experienced significant changes.

These changes can be divided into five major periods:

- French Colonialization (1863-1953) and the Sihanouk Years (1954-1970).
- Expansion of the Indochina War and the Lon Nol Regime (1970-1975).
- The Khmer Rouge and the Agrarian Revolution (1975-1979).
- The People's Republic of Kampuchea and the State of Cambodia (1979-90).
- The International Community and the Royal Government of Cambodia

3.2.1 French Colonialization (1863-1953) and the Sihanouk Years (1954-1970)

Cambodia was largely a country of smallholder peasant farmers when King Norodom consented to the country becoming a French protectorate in 1863. Progress in agriculture and other sectors was minimal throughout this period except for the development of rubber plantations which the French would export back to Europe. Indeed, as one author put it "few projects of real benefit to the Khmer people were carried out during the entire ninety years" (Martin 1994:32). The relationship between Cambodians and their French colonial masters was often cantankerous. The Khmers were "exploited beyond all limits"

to provide the French with comforts and revenues. At the same time however, the French took a disinterested role in the country itself, deciding to leave the inhabitants of Cambodia to their own devices in terms of planned economic and social development initiatives which included agriculture.

The one area where the French did have a lasting impact, lay in the introduction of French bureaucratic administration practices. In pre-colonial times, official government posts were dominated by local elites whose appetite for gain was checked by an inherent self-regulatory mechanism based on status and kinship ties, which promoted the maintenance of a certain decency of relations between them and their administrative subjects. In contrast, the system of recruitment under the French transformed these posts into parts of a faceless bureaucracy which eliminated any autonomy of local decision-making made by rural officials and replaced them with an urban educated elite, centralizing power within the capital and neglecting the rural areas. The centralization of authority within the capital has continued through successive regimes. Local officials became simple automatons, merely implementing orders from above.

In the time of the protectorate, the official's chief concern was merely to submit to sanctioned orders without undue display of imagination... Contact with the French led to Western role models displacing traditional ones, thereby widening the chasm between the 'educated' [urban] class and the peasantry (Ponchaud, 1989:156).

By the time of independence from France in 1954, Cambodia's rural problems were already quite pronounced. A clear deterioration in the conditions of small farmers had

already begun due in part to the forced system of private property, which was making its effects felt in the countryside. The monetization of the rural economy, combined with exorbitant interest rates, frequently forced small farmers off their land, and discouraged investment in agricultural improvements (Grunewald, 1990). Cambodia's agricultural sector remained one of the least developed in Southeast Asia with average rice yields barely reaching one tonne per hectare (Mysliwec, 1987). Double cropping or dry season cropping constituted less than 10 percent of total production. Without control of flooding or water retention, peasants were totally dependent on the monsoons, sometimes with disastrous consequences.

While remaining indifferent to the state of traditional peasant agriculture (Delvert, 1961), Sihanouk attempted to reverse the decline of agriculture by investing large sums in the development and modernization of the export production sector. In an attempt to alleviate farmers conditions and to provide loans to farmers in easy terms, the Sihanouk government created the Organisation Royale des Cooperatives (ORC). The cooperative provided loans to farmers at low interest and was credited by many as being responsible for an overall increase in rice yields as well as the construction of many dikes, canals and dams essential for successful rice production (Shams, 1995: 16). In addition, the government established several agricultural research stations at Prey Pdau and Beck Chan, and opened Chamcar Daung Agricultural University, offering courses in agronomy, veterinary medicine, forestry, fisheries, economics and engineering. Sihanouk's attempted transformation of Cambodian agriculture was brought to an abrupt

end with the expansion of the American war from Viet Nam into Cambodia, and by his overthrow in 1970 when he was replaced by the American backed Lon Nol regime.

3.2.2 Expansion of Indochina War and Lon Nol Regime (1970-75)

Prior to 1970, Cambodia was a net exporter of foodstuffs (primarily rice). Indeed, during the mid-1960's Cambodia was known as the rice bowl of Southeast Asia (Ovesen, 1995). The escalation of the second Indochina war on Cambodian land from 1968 to 1975 disrupted agricultural production and brought it to a virtual standstill¹¹. It would be difficult to exaggerate the suffering and destruction that the war brought to Cambodia. Agricultural production fell rapidly as bombing and military operations forced peasants off their land and concentrated them into the cities. In 1971 for the first time in its history, Cambodia became a net importer of food and became almost entirely dependent on international food aid. While the politically inexperienced Lon Nol government attempted to introduce agricultural reforms and cooperatives their initiatives were either thwarted by the war or badly implemented (Shams, 1994:18). During this period of chaos, urban moneylenders and merchants managed to accumulate land while peasants, forced into the cities with little provisions, continued to accumulate debt. Intensive US bombing after 1973 left much fertile land unusable. With more bombs dropped on Cambodia than were dropped in Europe during World War II, estimates concur that nearly one million people were killed, wounded, or maimed, (Shawcross, 1979).

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¹¹ According to Senior CIDSE Project Manager, Cambodia exported 500,000 tonnes of rice in 1967. This was the last time Cambodia exported rice until present day. (Personal Communication - Jan.16,1997)

Approximately two-thirds of draft animals were also eliminated. (Mysliwiec, 1987:56).

Such a situation, with mass starvation compounded by the increasing corruption of the military and administration, made it easier for the Khmer Rouge to attract popular support and to march into Phnom Penh in 1975 to take over the government with little struggle (Vickery, 1984).

3.2.3 The Khmer Rouge and the Agrarian Revolution (1975-79)

In April of 1975, relative peace returned to Cambodia. The advent of the Khmer Rouge regime with its promise of an agricultural revolution, which would raise the standard of living of the Khmer peasantry, augured well for the war-torn country, and had broad based support. While the country continued to face enormous reconstruction problems, it was generally felt at the time that agricultural conditions would soon improve. The Khmer Rouge promised to return Cambodia to the glorious days of Angkor when a well maintained irrigation network was at the heart of the empire's greatness¹² (Mehmet, 1996: 7) . Its goal was to restore Cambodia to a traditional agricultural and a classless society, and to raise the living standards of the people. However, the promised social and agricultural experiment soon turned into a nightmare for the Cambodian people. The brutal path to agricultural development which followed took a large toll on human life

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¹² Angkor wat has long been a symbol of nationalism since its rediscovery in the 1860's The KR used this symbol as a testimony to the potential within the Kingdom. Pol Pot often invoked this symbolism to inspire his revolutionary project claiming that "if we [Khmers] can build Angkor, we can do anything" (cited in Mehmet, 1996: 7).

and devastated the country's agricultural sector (see Vickery, 1984; Jackson, 1989; Martin, 1994). It is not possible to recount the full extent of the tragedy which befell Cambodia during the Khmer Rouge regime here, so only those aspects relating to agriculture will be briefly discussed.

While many Khmers and foreigners cheered the arrival of the Khmer Rouge, their leader Pol Pot, and the promised agricultural revolution, the elation was short lived. Only several days after taking Phnom Penh, the Khmer Rouge mercilessly and brutally emptied the cities, breaking up families, emptying hospitals and marching the entire population into the countryside (Ebihara, 1993:152-53). The country was isolated from the international community except for a few socialist diplomatic representatives. The ensuing revolution turned the country into a massive labour camp. Owing in part to bitter memories of French colonization and the more recent US bombings, war was declared against any western influence on both technology and human lives. Those who had, or were thought to have had, any association with Western ideas were systematically eliminated or died from arduous labour and hunger.

The Khmer Rouge set up by the Khmer Rouge whereby all private property was abolished and collective farms were introduced. At first the 'old people', as peasants were referred to, fared somewhat better than the 'new people', as urbanites were called. Religion was prohibited, with monks being publicly defrocked and pagodas destroyed. All forms of currency and trade were abolished and eating in private or scavenging for

food was considered a crime against the state - punishable by death. Schools were closed down, and western medicine forbidden. Long working days, of 10 hours minimum with meagre communal food rations, were instituted and people replaced draft animals in the fields (Mysliwiec, 1987). Mechanization or machinery was abandoned and the metal melted down for other uses. Draft animals used for transport rather than fieldwork became the property of the state and were communally held, thereby making them more vulnerable to disease and epidemics like Rinderpest, and Anthrax (Shams, 1994).

The results of the Khmer Rouge experiments were devastating. Over a million people succumbed to hunger, hunger-related diseases and extermination. While the educated classes and the elite were the principal victims of these atrocities, peasants also became subject to mass killings as tensions and competitions between Khmer Rouge factions intensified over time. Young soldiers, hardened by years hiding in the forest during the Sihanouk period were often placed in control of groups or villages. Although this revolution was meant to be a peasant revolution, the experience and wisdom of peasant farmers was ignored as the younger generation was pitted against the elder, resulting in a loss of peasant knowledge. All extension activities from the agronomy department had been halted and technicians were either killed or kept their skills secret for fear of being identified as educated or skilled. People become lifeless and numb. An account of the life under the Khmer Rouge is given by Cambodian farmer Meas Nee:

As trust was broken we reached a time when we could think only of ourselves and our great need; the dignity and pride in our identity, formerly an important part of our lives, entirely disappeared. During the

years and months and days of the Khmer Rouge Regime it seemed that there was no longer a future to plan for. Our life had narrowed, narrowed, narrowed to think only of survival. In those hungry Khmer Rouge days, we sat in endless meetings to be lectured and criticized and betrayed but all that could occupy our minds was to think where our next food could be found. Self-reliance, hope for the future, and dignity, were drained away... In a time of peace, human beings have their place in the world and it is a place of dignity. Other things are important relative to the to the dignity of human beings. In the time of war and of the Pol Pot regime, human beings had no dignity...at different times I lived under the control of different factions and this was always true. Soldiers were strong; village people had no power... people became the equipment of the organization, they could be used like animals, like machinery. It was as if they were not human. The fact that they were hungry or tired or grieving meant nothing to those who controlled their lives. They could not talk, they could not cry. It was like being squashed into the shape of a box; unable to express anything. There was only numbness... (Nee, 1995:27-29)

As they promised, the Khmer Rouge developed water control and forced new farming technology onto the people, but their neglect and hostility towards people versus ideology meant that many of their projects were ill-conceived or poorly managed lacking any real participation on the part of the farmers.¹³ Revolutionary experimentation, especially as regards irrigation, resulted in poorly constructed work which were swept away at the first floods. Some irrigation systems built against the gradient led to the drying out of ricelands. The small rice plots of traditional farmers were consolidated into large unlevelled fields which resulted in uneven water distribution and water pockets making rice cultivation difficult.

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¹³ As the KR intellectual guru, Khieu Samphan declared "technical skill is not the determining factor [of efficiency]. The determining factor is in fact the political and ideological stand of our... workers": (cited in Jackson, 1989:77)

By the time the Khmer Rouge had been driven out of power in most of the country, the peasants had found waterways redirected, humid grazing areas dried out, and areas which had been ideal for non-flooded crops now covered with water. Thus in 1979, when the peasants started to return to their ancestral lands, they often found themselves more than ever vulnerable to drought and floods (Ebihara, 1993).

All of the agriculture research stations were destroyed during this period and all research records and germplasm collections lost. As seed and food were held collectively by the Khmer Rouge, thousands of years of peasant and natural seed selection were lost. The art of the peasant farmer to optimize the use of a range of varieties, their perpetuation and improvement from year to year based on observation and traditional knowledge was lost due the Khmer Rouge ignorance and through the mixing of seeds collected for communal storage. Floating rice varieties were almost completely abandoned during this period (Lando and Mak, 1991). The agricultural university was closed in 1975 and the books had either been lost or destroyed. It was evident that it would take generations for Cambodia to overcome the consequences of the war and the Khmer Rouge regime, and years to bring agriculture to even its pre-war status.

3.2.4 People's Republic of Kampuchea / State of Cambodia (1979-1990)

When the People's Republic of Kampuchea (PRK) came into existence in 1979, after the overthrow of Pol Pot's Khmer Rouge regime, the government inherited a nation that was destroyed in virtually all aspects (Kannan, 1997). The Khmer Rouge had subjected the

nation to an unprecedented, radical, social, political, and economic revolution which had left the country in ruins. At the time of the fall of the Khmer Rouge, there was no government administration, no system of education, no monetary currency and almost no productive industries. The agricultural sector, which was identified as a priority, was left in a state of disarray to such a degree that in the aftermath of the Khmer Rouge regime, Cambodia faced a famine. The international community responded with almost US\$ 700 million from 1979 to 1981 making it the largest aid effort of its kind ever (McAndrew, 1996). Most of this aid was channeled towards emergency relief efforts through multilateral organizations such as the UN and the International Red Cross who were assisting refugee populations at the Thai-Cambodian border.

The response of the PRK government to the state of the country was to quickly embark on a reconstruction strategy strongly influenced by socialist development patterns prevalent in the Soviet Union and Vietnam. Land and other natural resources were brought under the control of the state and farms were collectivized (Frings, 1994). Cambodians were encouraged to return to their original communities from before the war assuming they had not been mined. However, these farmers were faced with difficulties when they returned.

Most often after returning to their villages they found that their houses had been destroyed or occupied by other people. There were no more individually owned draft power, agricultural equipment and inputs (UNDP, 1989 in Shams, 1994)

To overcome some of these difficulties, farmers were organized into solidarity groups

known as *krom samaki* and shared labour, equipment and agricultural inputs. The government also had a political interest in organizing an efficient system for collecting rice to distribute to its civil servants and soldiers (Frings, 1994:49). The average size of the collective groups were 15 to 25 families. All aspects of life were brought under a central authority with one major goal: food self-sufficiency. It is also suspected that the Vietnamese 'puppet' government was keen to control agricultural so as to usurp any surplus in Cambodia to deliver to the hungry Vietnamese population across the border.

Not surprisingly, the collectivization of farming tended to curb agricultural development but it did help to put agriculture back on its feet and provided some form of security for vulnerable families who had lost family members during the war or had members who were sick, elderly or disabled (Mysliwiec, 1987). International assistance from the Soviet Bloc countries and the West helped to pay for agricultural equipment and inputs such as seed, fertilizers and pesticides, which were provided free of charge to farmers up until 1982 (Shams, 1994: 21). These inputs were invariably applied in a uniform matter according to predetermined recommendations. Unfortunately, both the urgency of restoring the agricultural sector as rapidly as possible, and the large sums of international funds available often resulted in some poor decisions and poor choices of aid which themselves created problems. For example, there was no time to do proper research on appropriate seeds or to check whether certain pesticides would have detrimental effects on humans, animals or fish. As Ratner notes "many of the inputs provided for production during the relief operation were inappropriate" (1995: 9).

In 1982, the flow of international aid was abruptly shut off when international pressure condemning the Vietnamese supported regime in Cambodia resulted in the declaration of an economic embargo by most Western countries (Mysliwiec, 1988). The political dynamics of the cold war during this period meant that Cambodia was virtually forgotten - at least in the West. The Soviet Bloc continued to provide aid of approximately \$80 million annually to Cambodia up until 1989 (McAndrew, 1995).

In the mid 1980's the PRK government permitted some private activities including the "family economy" in which households were given the right to plots which could be used for private production and consumption. In 1989, the Far Eastern Economic Review (1989) quoted Premier Hun Sen admitting that "many of the shortcomings and weaknesses of the Cambodian economy were due to the hasty formation of a socialist-oriented style of production when the productive forces were too premature". This signalled the demise of the communal farms and Cambodians returned to private agricultural production although they would not formally be granted land rights until 1989, when private property was officially recognized in the new State of Cambodia (SOC) Constitution (Frings, 1994). At the same time the *krom samaki* system of agricultural development was formally abandoned. The constitutional reforms were an acceptance and legalization of a situation which had already come to prevail in the countryside. By some accounts, 90 percent of farming was already undertaken by the family households and farmers were engaged minimally in cooperative work (Vickery, 1992:51). The reforms gave peasants usufruct rights for the use and management of land,

although land officially remained state property until 1991 (Frings, 1994).

It is important to note however that the economic liberalization policies of the government, including land privatization did not mean that agricultural sector was left to the vagaries of the free market. The government continued to intervene in almost every aspects of the agricultural sector including price controls and the provision of subsidies for agricultural inputs. The need for intensification of rice crops was obvious as Cambodia was still importing rice to feed its population.

As the Green Revolution continued to sweep through Asia, Cambodia was left playing a game of catch-up. Throughout the 1980s the Soviet Union continued to provide agricultural assistance through the technical expertise and agricultural inputs including pesticides which were distributed to farmers through the commune leaders. In addition, the government continued to direct peasants to maintain labour exchange groups for mutual assistance and dissemination of agricultural technology.¹⁴ However, the government had little means to enforce this policy and it soon ceased to exist. The adoption of agricultural technologies was left on a voluntary basis.

3.2.5 The International Community and the Royal Government of Cambodia

The collapse of the Soviet Union in 1989 spelled an end to its continued involvement in

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¹⁴ A resolution at the Second National Cadres Conference read that "the Party and State encourage the peasants to live and earn their living following the methods of mutual aid (provas day)" (cited in Frings, 1994: 52)

supporting Cambodia as aid money quickly dried up. Subsequently, after years of indifference, the West, prompted by the withdrawal of Vietnamese soldiers and the vacuum left by the collapse of the Soviet Union, unleashed a barrage of NGOs and aid to assist Cambodia and its reconstruction efforts. Although the government still had nominal jurisdiction over agriculture it became clear that defacto control was held by international organizations and non-governmental organizations which filled the void of government inaction in this sector particularly in the area of agricultural extension.

Now that Cambodian society was moving towards normality following the war many international development organizations were re-examining their strategies which they had previously implemented immediately after 1979. There was a growing realization that the introduction of high input-intensive technologies in the aftermath of the Cambodian crisis had a profound and damaging effect on agriculture in Cambodia and did little to achieve sustainability. The availability of free inputs resulted in inappropriate technologies and a dramatic increase of pesticide consumption on some farmers' fields. Imported pesticides were initially distributed through the United Nations FAO in 1979 and continued by the Soviet development body. As was foretold in Rachel Carson's (1962) *Silent Spring*, these chemicals began to cause more problems than they solved. Exact figures are not available but in the mid 1980's vast yield losses were reported caused by green leaf-holder, brown plant hopper and rice stemborer insects.¹⁵ Pest

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¹⁵ Interview with Lot Miranda, Director of HEKS, a Swiss Inter-Church Aid NGO (January, 15, 1997).

outbreaks were occurring throughout Cambodia and by the time the centralized department of agronomy could respond (primarily with increased pesticides) the crops were destroyed.¹⁶ The outbreaks were the invariable result of indiscriminate use of mainly broad spectrum pesticides which induced resistance in pests and destroyed natural enemies. While the pesticides seemed to address the initial problem of pests, farmers also began to notice that many fish snails and crabs were dying apparently due to pesticide use.¹⁷

The international community was determined not to make the same mistake as it renewed its commitment to Cambodia following the Paris Peace Accords in 1991 which paved the way for the UN supervised elections in 1993. A total of US\$2 billion was allocated for the United Nations Transitional Authority in Cambodia (UNTAC) which primarily supported peace keeping operations prior to the elections. Bilateral and multilateral organizations promised an additional US\$2.3 billion in assistance for the purposes of development during 1992-95. For a relatively small country like Cambodia, with a population over 10 million, the international commitment can only be described as considerable and gave it certain influence with newly elected Royal Government of Cambodia in 1993.

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¹⁶ Interview with Yuta Hara, JICA agricultural experts working with Department of Agronomy (January 17, 1997.)

¹⁷ As IDRC Program Officer Andrew McNaughton noted, "chemicals may increase rice yields in the short term, but the long term effects could be very damaging" (cited in Cambodia Times, Aug 19-25, 1996).

As mentioned above, one of the concerns of the international community was to adopt a more sustainable framework towards agricultural development. A 1993 UNTAC report stated that Cambodia "needs to establish a framework for the rational management of natural resources". Likewise it advocated the need "to ensure, in the case of renewable assets, that a proper strategy of regeneration and sustainability is pursued for long term advantage of future generations" (UNTAC report cited in Ratner: 13). The international community made the concept of sustainable development an important goal in its development efforts and the Royal Government was quick to adopt the rhetoric if not the actions. A 1994 policy statement from the Ministry of Agriculture, Fisheries and Forest (MAFF) identifies the government's objectives "to ensure that the pattern of development is sustainable socially, politically, fiscally and environmentally", and adds "part of the strategy for sustaining farm production is technology development and dissemination to assist farmers in improved farm management" (MAFF, 1994:1). The extent to which this will be translated into action, however is yet to be seen.

The traditional technology, still prevailing in agricultural practices of most Cambodian farmers, has been sustainable for many centuries. The challenge today however, is to produce more food on less land and for a significantly larger population. Political and social stability along with the on-going de-mining operations and increased numbers of draught animals are necessary to return to pre-war production levels and beyond. Yet raising productivity will also require technical change in the farming systems of resource poor Cambodian farmers. The key for agricultural development is therefore to achieve

this increase while not disrupting the environmental balance that has kept the farming systems productive over the centuries.

In terms of potential for food production, Cambodia is a rich country with a low population to land ratio, bountiful water resources, a diversity of soils, and a climate suitable for year round production. Yet as a consequence of Cambodia's tragic past, its agriculture is not nearly being optimized. In terms of human potential, the Cambodian peasant is a prudent and ingenious farmer whose traditional farming skills and knowledge have been refined by years of experience. Khmer farmers have survived by devising a number of risk aversion strategies to deal with nature's unpredictability, and they use the environment to meet their individual site-specific needs. Herein lies hope for the IPM-FFS intervention and for future agricultural development.

3.3 Agricultural Extension

The concept of agricultural extension first entered into development discourse as a responsibility of the state. It was something a modern state was to provide as one of the fundamental "fruits of independence" (Christoplos and Ulrich, 1996) which every citizen had the right to expect from the government in order to increase *national economic growth* through the introduction of modern agricultural techniques. From its very beginnings, extension was developed from a natural science perspective, which resulted in projects that target crops rather than people. Extension was intended to address national objectives (availability of food), not household problems (hunger). These early

priorities were based on the still widespread faith that technologies will spread evenly throughout rural areas and improve the conditions of fields (if not farmers).

However, when growth failed to eliminate poverty among farmers, efforts were initiated to use extension as an instrument specifically geared towards supporting disadvantaged people. This idea arose as observers, particularly NGOs and development workers, began to notice that poor farmers on marginal lands were benefitting neither from the Green Revolution nor traditional extension approaches. It quickly became evident that the desperate situation of the poor did not only stem from the wrong choice of technologies. The complex nature of the problems encountered by resource poor farmers has led many to view extension as an essential part of a broader effort to help farmers 'pull down services' from agricultural research and extension which suit their needs. Despite this, the majority of extension services both within Asia and including Cambodia still focus more on 'pushing' technology out to the farmers. The best example of this extension model is the Training and Visit System (T&V) which has been adapted by government and non-government groups in Cambodia.

The prototypical T&V system is a form of extension management that relies heavily on the technology diffusion process. It emphasizes regular training of village extension workers and designated 'contact farmers' to serve as entry points into the communities. In addition, it seeks to enhance linkages between research and extension. The carefully planned extension models include, farm visits, training of extensionists and serving as a

liaison between the farm and research station. The extension workers are trained by regional supervisors who receives their information from subject matter specialists working on the research station. The extensionists are assigned a specific number of contact farmers with whom they meet on a regular basis. The contact farmers, in turn, are supposed to convey the extension message to so called 'follower farmers'. With this system, information is supposed to flow from research via subject matter specialists and extension workers, to contact farmers and, finally to 'follower farmers'.

Although the T&V system is not formally implemented across Cambodia's agricultural sector, approaches based on this model are widely used by both the government and various NGOs. One of the biggest obstacles in applying this model universally across Cambodia is the lack of human resource capacity. As the above section indicated, many educated Cambodians were either killed or fled to other countries during the KR regime. Those that remain prefer to stay in the urban areas where they can be seen by their supervisors and advance more easily. Generally, working with uneducated farmers in the provinces is not perceived as being a good way to advance one's career¹⁸.

Commonly observed weaknesses of the T&V approach are that messages conveyed to farmers are not implemented or do not trickle down to follower farmers as expected in the model. Several reasons have been cited for this. First of all, the information passed on to village extension workers is often not appropriate to the conditions of the field by the

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¹⁸ Personnel Communication with Kim Serei Kith, Department of Agronomy (March 10, 1997).

time the recommendations reach them. Secondly, the contact farmers who deal with the extension workers are usually the better informed, more innovative and wealthier farmers in the village who can afford to try out new technologies. Finally, dissemination of information from contact farmer to follower farmers is not guaranteed. In short, there are many situations which can thwart the intention of trickle down approaches.

Alternative extension approaches different to the technology transfer model have drawn a great deal of attention in recent years. Increasingly, it is being recognized that "agricultural extension is an interdependent and interactive function" (River et al., 1989: 140). Namely, agricultural extension is rarely useful in and of itself. Its effectiveness relies on other aspects in the overall context of agricultural development including the accessibility of information, availability of credit, market conditions, capacity of institutions, social organization of farming communities etc. Instead of promoting the transfer of ready made technologies, the emphasis is on achieving the following goals:

- building up the capacity of farmers to pull down information they need and make external agricultural knowledge and practices more accessible to them.
- developing the farmer's own ability's to experiment and draw conclusions to make sound decisions.
- empowering farmers to improve their own socio-economic positions in society.

In 1987, Chambers and Jiggins reversed conventional thinking in agricultural development by illustrating that farmers are experimenters and technology developers in their own right. It seems odd that this idea had been largely ignored by scientists before,

particularly in light of incredible rice farming systems found in Cambodia during the Angkor civilization and elsewhere. An important approach to developing agriculture is therefore, to assist farmer experimentation by; (1) creating stable networks of experimenting farmers for identifying problems for research and discussing experimental design and results and (2) by training farmers to set up and draw conclusions from experiments. This approach has been called participatory technology development.

A related perspective is an approach which concerns itself with indigenous knowledge. Farmers are seen as researchers who have for centuries, developed effective strategies suited to their own environment. It is important from a development point of view, to study such indigenous knowledge systems and to design methodologies for analyzing and using indigenous knowledge (Warren, 1993). Modern agriculture tends to destroy indigenous technologies and knowledge but these sources may provide important information particularly in the area of low external input technologies. Therefore, there is an emphasis on preserving this knowledge to share with other farmers.

A third important development in recent years is the extension approach using non-formal education methods. Non-formal education methods are defined as 'the fostering of quality of life enhancing learning outside the formal school system' (Kenmore et al., 1995:27). It explicitly recognizes human values as a basis for learning and is based on Paulo Freire's (1985) perspectives on education as a problem solving, consciousness raising strategy for empowerment. Education as an empowering process places

importance on how educational processes and relationships affect the learners, not only on the contents. Therefore, non-formal educational approaches emphasize experience based learning which is linked to solving real problems. Its aim is to empower people to actively solve those problems by encouraging active participation, self-confidence, dialogue instead of lectures, joint decision making and self-determination. The non-formal education approach is particularly relevant in the context of this thesis, since it was the extension approach initiated by the National IPM Program in Cambodia.

3.4 IPM and IPM Training

Integrated Pest Management (IPM) was practiced long before the term existed. As far back as the 1950's 'harmonious control' methods of agriculture were being used and promoted in Canada, employing crop protection strategies without the use of pesticides. The discovery of DDT in the 1940's and of other chemical pesticides which followed, displaced most of the previous integrated pest control approaches, since the effects of the new pesticides appeared miraculous. Emergence of the now well known side effects of pesticides did not however, take long to surface. Pesticide resistance, pest resurgence, and outbreaks of formerly secondary pests developed along with the increased environmental contamination and health problems (Forget et al., 1993; Jeyaratnam, 1990; Dinham, 1993; Weber, 1992). A solution to the problems caused by pesticide use began to be developed by entomologists through integrated control practices and IPM was reintroduced into the vocabulary of plant pathology in the late 1970's.

There have been many definitions offered for IPM over the years, the FAO's definition is presented below.

Integrated Pest Management (IPM) is the careful integration of a number of valuable pest control techniques that discourages pest population development and keep pesticides and other interventions to levels that are economically justified and safe for human health and the environment. IPM emphasizes the growth of a healthy crop with the least disruption of agro-ecosystems, thereby encouraging pest control mechanism (FAO, 1994:2)

Important in this above definition is the ecological approach of pest management and the integrated manner of applying all control techniques available. A consequence of these aspects is that pesticide use is allowed as a control measure, but only as a last resort, using application methods which are the least disruptive to the natural environment. IPM seeks to incorporate natural processes into farming, and reduce off-farm inputs, leading to a more profitable and efficient production, and to better human and environmental health (Burn, 1987:7). IPM relies on farmers' increased knowledge, active monitoring and analytical decision making with respect to pest control, active use of improved genetic and biological potential of plants, and, in some areas, better rotation. Pest control decision making is based on frequent and systematic field monitoring, which considers pest populations, natural control factors, crop status and climatic conditions. Measures preventing the development of pest populations, such as the use of resistant varieties and cultural practices, are an important part of IPM.

An aspect often used in IPM definitions is the concept of 'economic thresholds'. This

threshold was determined by considering economic factors which measured yield loss against costs of control. The economic damage threshold was determined as the point at which expected yield loss (kg/ha multiplied by price per kg) equals the estimated cost of pest control measures. Application of economic thresholds seem to increase profitability compared to prophylactic spraying, but the results were still unsatisfactory. Furthermore, applying the economic threshold concept in the field was very difficult as it considers only one pest at a time whereas farmers must deal with a multitude of pests in their crops. Expected yield loss depends on factors which do not necessarily fit into a neat mathematical formula. Yield depends on factors such as the population dynamics of both pests and predators, stage of plant development, expected weather and market conditions. As a result of the many difficulties with the economic threshold concept, it was usually abandoned by farmers and extensionists. Instead it is generally agreed that farmers themselves possess the necessary site-specific information to make the right decision whether a control measure is economically justifiable.

As IPM developed, it became clear that the emphasis with respect to decision making capability should be placed on the farmers themselves as the manager of the crop who takes decisions based on field evaluations, previous experiences, and knowledge about ecological processes and effect of their actions. This makes IPM not only knowledge intensive, but also site-specific. However, before we get swept up in the populist ideal of the noble peasant farmer as an endless repository of indigenous knowledge, we must realize that while the farmers know much, they do not know everything. As Bentley

(1992,1994) correctly put it, "what farmers don't know can't help them"¹⁹. Therefore, IPM still requires extensive training and extension efforts.

3.4.2 The National IPM Program in Cambodia.

A different approach to training contents and process for IPM was incorporated through the framework of the National IPM Program in Cambodia and its partners which started in 1993. The FAO Intercountry Program for IPM in Asia, with its experiences throughout Asia, was the ideal partner to assist in the design and implementation of the intervention and training. Its model was adapted to "suit field conditions in Cambodia" (Cambodian National IPM Program, 1996). The curriculum emphasizes crop management practices and the training program is structured so that farmers are taught processes to solve field problems. By designing their own studies they can continue to protect their livelihood and natural resources. According to the National IPM Program Briefing (1996: 2), the goals of the national IPM program focus on developing the following:

- an ongoing FFS program at the village level;
- training based on principles which farmers understand, instead of instructions or recommendations which farmers must follow;
- community organizations (eg. community rat control);
- links with development and research;
- activities that involve knowledge, understanding and management as well as technology.

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¹⁹ "Farmers know some things that scientists know, somethings that scientists do not know, and also, farmers do not know somethings that scientists do know" (Bentley in Scoones and Thompson, 1994).

As described previously, IPM is knowledge intensive and site specific. Therefore pre-set recommendations in a package proved to be untenable. Instead of instructions for field sampling and spraying based on centrally determined economic threshold levels, the National IPM Program in Cambodia applied a more ecological approach to IPM. Accordingly, IPM was provided with a set of principles not recommendations. The IPM principles include; growing a healthy crop; observing the field weekly; conserving natural enemies; and farmers become IPM experts (Kenmore et al, 1995).

With these principles, a set of agronomic and ecological concepts are provided to farmers as tools in their decision making. The farmer remains the central manager and independent decision maker in agricultural concerns. One obvious example of the different approach is the changed concept of economic threshold. Instead of presenting a precise but unworkable co-efficient, the program enhances the concept of "experience threshold" which develops as the farmers learn and experience. A threshold that build on farmers' expertise and experience fits better into the overall role of farmers as experts and independent decision makers. IPM also promotes regular observation of the crop by the farmer and informed decision making about pest control strategies.

This approach to IPM requires a different approach to extension. Farmers are not considered as passive recipients of external recommendations and inputs, but active learners and expert masters in their own fields. Therefore, the principles of non-formal education seems to be an appropriate strategy in training farmers. The principles of non-

formal education in IPM training enable farmers to learn through experience, focus on practical level field problems and concentrate on empowering farmers to make the appropriate decisions.

The IPM Program does not focus on transferring specific skills to farmers per se. Rather, it seeks to build up the capacity of farmers to make their own sound decisions by providing some basic principles and tools for their analysis of crop protection.

Specifically, the IPM program emphasizes the following skills:

- **Identification of Pests and Predators:** The farmers are trained to identify different pests in their crops through observation. The scientific names are not important but their function is. Is the insect harmful or beneficial? What kind of damage does it do to the plant and at what stages of crop development?
- **Regular Field Observation:** It promotes the use of systematic procedures such as random access of sample rice fields to assess the occurrence of pests and natural enemies relative to the crop's developmental stage.
- **Self-experimentation:** Encourages farmers to experiment with planting times, varieties, soil cultivation practices, fertilizers and biological controls for their effect on pest populations.
- **Sharing of Knowledge:** It promotes farmer to farmer exchanges of information and encourages open discussion with other farmers about decisions. The process of decision making is more important than the decision itself.

The IPM training program is set up under the framework of Farmer Field Schools (See Box 3.1). These 'schools' are where small groups of farmers meet every week through an entire rice growing season (12-14 weeks) to carry out field observations, analyze data, draw conclusions and debate. The FFS is usually housed in a central place in the

Box. 3.1 Key Ingredients of the IPM Farmer Field School (FFS)*

- A field school group consists of around twenty-five farmers, selected from one village; in the field school, farmers work in subgroups of five, the optimal size according to non-formal education principles.
- The field school lasts the entire season, so that farmers can work with each stage of rice plant development. This is important because pest problems change with the stage of the crop.
- Each field school has a demonstration field, consisting of an IPM plot where IPM principles are used to take pest control decisions, and a plot which is treated with pesticides.
- The instruction is such that there is very little lecturing during the training. The trainers have been trained not to allow themselves to be forced into the position of an expert, but rather to be a *facilitator* of the learning process. They are not to answer questions directly but instead make the farmers think themselves. A question answered with a clear answer is a lost opportunity for learning.
- Farmers meet in or near to the field under a tree or a small shack which provides shade.
- The main activity is to enter the demonstration field in groups of five and observe sample rice hills, chosen in random diagonally across the field. Notes are made of insects, spiders, damage, weeds and diseases observed at each hill. The growth stage of each plant is observed and insects are caught and placed in plastic bags.
- In subgroups, observations are collated in drawings making up the agroecosystem analysis. A conclusion about the status of the crop and possible control measures are recommended by the five members together. The subgroup's agroecosystem analysis is presented to the whole field school where they are discussed by the entire group. The field becomes the main training material and the farmers' own observations the source of knowledge for the whole group.
- During each session special subjects are introduced related to field problems such as rat population growth and effects of pesticides on rice growth and natural enemies.
- Group members are encouraged to train other farmers. The farmer-to-farmer strategy is an important part of mass dissemination of IPM knowledge.
- A field day is organized at the end of the season in which the results of the farmer field schools are made public to the entire community.

* (Farmer Field Schools adapt to different situations and may vary slightly from the model listed here).

community and maintains its classroom in the rice field itself. There are a number of

assumption with the FFS model and these are outlined by Kenmore (1995:5).

- farmers are rational, skeptical, curious, and do experiments;
- farmers will make important decisions;
- farmers should be encouraged to act upon their decisions;
- local ecology is significant in these decisions;
- farmers should [use] scientific field skills and concepts;
- these cases will consider alternative explanations, analyses, predictions and evaluations and come to actionable conclusions.

A farmer field school consists of about 25 farmers who are familiar with one another.

The FFS experience itself is firmly wedded to the field and field work. A study field is usually set up where members can observe progress, study agricultural development, and discuss it in groups. The placement of the school is significant in that it focuses the attention on real problems which can be observed rather than giving out handouts in central villages. The important quality that defines each session of the FFS is shared field time where participants can bring up new questions or observations based on first hand experiences. There is no focus on scientific names, as the group works out locally understood terms in advance for things such as plants, insects, soil conditions, etc.

The FFS participants are divided into smaller groups and measure plants, identify pests, count and record them and take samples for later reference. These smaller groups are then responsible for presenting summaries to the plenary. The experience of different farmers are brought to the fore during the summary discussions, so that a larger pool of expertise is applied. Participants are encouraged to explain their observations and speculative questions and comments are encouraged.

The role of the IPM facilitator in this process should not be underestimated. They must be both good listeners and questioners. Their role is not to lecture but rather to encourage everyone to participate and facilitate the learning process. In this process, every question farmers ask is treated as an opportunity to extend learning through group discovery. One of the most frequent questions during field schools is "what is this insect?". However, rather than give farmers the exact name and end the learning opportunity, the facilitator attempts to involve the farmer in answering the question him or herself. Hence, as Pincus et al. (1992) note, the trainers rarely offer the "right" answers. A typical dialogue between trainers and farmers is constructed below:

Conventional Extension Training	IPM-FFS Training
(The trainer lectures on rice field pests, using both Latin and local names, and then accompanies the farmers to a field where they observe insects).	<i>Trainer:</i> OK, Let's go to the fields. Remember work with your groups of five and collect the bugs along the transect in both the IPM and local package fields
<i>Farmer:</i> What's this bug?	<i>Farmer:</i> What's this bug?
<i>Trainer:</i> It's a Brown Plant Hopper, a serious pest. You must spray your fields with (the preferred pesticide) in accordance with the instructions on the local package so you don't get these pests in your field.	<i>Trainer:</i> Where did you find it?
	<i>Farmer:</i> On a plant over there.
	<i>Trainer:</i> Where on the plant?
<i>Farmer:</i> I see.	<i>Farmer:</i> On the tip, the underside.
	<i>Trainer:</i> What was it doing? Does it eat rice plants?

As the above example illustrates, a simple question is transformed into a discovery

process whereby the farmer can build an agro-ecological understanding of the insect in question. The insect will be remembered functionally not nominally and the entire agroecosystem is linked to that one insect. Similar questioning processes are employed throughout the process which encourage group participation and discussion.

Based on their findings, farmers make decisions whether or not to carry out any interventions. The ability to make decisions is helped out in part by experiments to understand the hazards of chemical pesticides on crop health and natural enemies. Experiments to understand the impact of insecticides on predators and field comparisons of cages (insect zoos) with and without predators help inform farmers of the risks of pesticide-use. In addition, farmers learn about the number of prey eaten by each predator, food preference and how predators survive when no rice herbivores are available.

In contrast to other agricultural extension approaches, the National IPM-FFS presents a strategy which emphasizes empowerment of farmers to make their own decisions based on knowledge, field monitoring and self-experimentation and access to highly trained specialists. Farmers are not told what to do, but through facilitation they discover how to learn by doing and building on their experiences. Through this facilitation model the IPM program aims at making informed decision makers and independent farmer managers in Cambodia.

Chapter IV

Agricultural Intervention and Farmer Participation

4.1 Introduction

Over the last decade, the idea of "participation" has become a modern day shibboleth of rural development discourse. Its popularity has grown enormously over the last few years among social scientists, NGOs and practitioners in research and development on alternative agriculture and natural resource management. This chapter will examine the ideas behind support for farmer participation in rural development and identify important considerations for participatory development interventions which will be useful for the IPM-FFS study. Section 4.2 begins by briefly underscoring the importance of farmer participation in sustainable agricultural interventions, recapitulating many of the arguments outlined earlier in chapter 2. Section 4.3, illustrates the many faces of "participatory development", demonstrating that participation can mean different things to different people. This section argues the necessity for farmers to actively participate as stakeholders in development interventions. In section 4.4, the constraints of farmer participation and empowerment are analyzed. This section challenges the populist conception of participation, demonstrating the difficulties and constraints of making interventions truly participatory for resource-poor farmers. Finally, section 4.5 concludes the chapter, describing characteristics of truly participatory development interventions which will serve as a useful framework for our case study analysis in chapter 6.

4.2 Farmer Participatory Development: The Rationale

The term participation has gained a lot of popularity during the last few years, particularly in reference to sustainable agricultural and rural development projects (Chambers, 1995; Thrupp et al., 1994; Uphoff, 1992). Participation has come to describe both, the goals of development interventions, and a means of solving a deluge of social and technical problems in rural societies. Faced with the realization that former development strategies have failed to achieve much in terms of improving conditions for rural people, many development planners have come to embrace the idea of increasing beneficiary participation in development interventions and making projects less top-down oriented and more bottom-up driven (Rouse, 1996). The perpetual cycle of poverty and inadequate crop production was attributed to the peripheral status of farmers in the development process, whose only previous role in the development process was to act as beneficiaries for which they were the target.

As presented earlier, the idea of farmer participation is believed to be particularly relevant to sustainable agricultural extension and research interventions. Chapter 2 underscored the importance of participation and the necessity of viewing resource-poor farmers as *partners* in development, rather than as obstacles of development (Curtis, 1995). As previously noted, the peripheral role of resource-poor farmers in the agricultural development process has often resulted in a failure to take account of the complex network of factors affecting agriculture, and has resulted in research and extension programs which are inadequate in addressing the needs and priorities of

resource-poor farmers and agricultural sustainability. Under-educated and often dependent on rural elites, they lack the means to win greater access to resources, and to prevent the imposition of unworkable programs or technologies. Therefore, participation of resource-poor farmers is a crucial ingredient in development initiatives, as a means of both influencing and adopting sustainable agricultural methods and technologies.

At the World Conference on Agrarian Reform and Rural Development (WCARRD), in 1979, the international community linked the reason for the failure of rural development initiatives to the lack of *active* participation of the poor in the programs supposedly designed to assist them. The WCARRD conference declared that participation by rural people was a basic human right, and if rural development was to realize its potential, disadvantaged rural people had to be organized and actively involved in designing policies and programs, and in controlling social and economic institutions (FAO, 1992).

Participation has been widely touted as the "silver bullet" to a number of problems facing sustainable development programs. Emphasis on participation in rural development programs is a part of a growing shift in development discourse, which views local participation and local capacity development as an integral part of rural development interventions. The promotion of community participation has become a major thrust of development interventions of some NGOs in Cambodia in their shift away from relief efforts towards a more community-based approach. Community participation is seen as the central means by which local populations can reap the rewards of their efforts in

development initiatives. The literature on participation outlines some potential advantages of participation as a tool in rural development projects. Among them:

- **Economies of scale.** The high cost of providing development services to scattered, small scale farmers is a major constraint for agricultural extension programs. Participatory initiatives constitute a grassroots mechanism that allows development agencies to broaden their impact.
- **Confidence building.** A participatory approach may serve as a basis for increasing individual and community self-esteem and self-reliance and encouraging a sense of responsibility.
- **Higher productivity.** Given access to resources and a guarantee that they will share fully in the benefits of their efforts, resource-poor farmers become more receptive to new technologies and methods, and achieve higher levels of production and income.
- **Reduced costs and increased efficiency.** Farmers' contributions to project planning and implementation represent potential savings that reduce project costs. Resource-poor farmers also contribute their knowledge of local conditions, facilitating the diagnosis of environmental, social, cultural and institutional constraints.
- **Democratization.** The limited size and informality of community-based groups is suited to conditions of the resource-poor, who may lack organizational and literacy skills. Moreover, the group environment is favourable for the diffusion of collective decision-making and honing leadership skills.
- **Sustainability.** Participatory development may lead to increased self-reliance among the poor and the establishment of a network of self-sustaining rural organizations such as independent farmer organizations.

While community participation continues to be promoted, many questions have arisen as to the exact meaning of the term. Despite significant progress in some areas, the nature of participation at the local level has not always been consistent, or has been less significant than had initially been conceived (Lane, 1995). Participatory development approaches are often infused with many contradictions or discrepancies in terms of the

theory and the practice which set parameters around the nature and substance of participation, and which raise questions about the goals of participation itself.

4.3 The Many Faces of Participation and Empowerment

The concept of participation has a broad diversity of interpretations. NGOs and social scientists tend to be the most prevalent advocates of participatory approaches, but participation has also visibly entered the rhetoric of mainstream organizations such as the World Bank and the United Nations. Most participatory activities have focused on involving resource-poor farmers and other community members in R&D projects at the local level, for example, in the development and adaptation of new technologies or introduction of natural resource management methods in marginal areas. This is the case with the formulation of the National IPM-FFS Program in Cambodia.

While ideas concerning the nature and content of participation are often different, common ideas converge around the active role which people must play in the overall development process. Where the various conceptions of participation start to differ is in their assessment of the underlying goals of participation. Two main views have characterized the objectives of participation in agricultural development. The first view emphasizes *participation as a means* by which to deliver better development interventions in rural communities (Nelson and Wright, 1995: 1). This view is premised on the understanding that participation can help to accomplish the aims of a particular project more efficiently, effectively or cheaply. Hence, agricultural extension efforts

should be extended into communities and farmers should be encouraged to participate in extension activities. The second view emphasizes *participation as an end*, whereby it can help transform the existing social, political and economic structures that pose obstacles to rural development (Ibid:1). This view implies that communities or groups can set up processes to control their own development. The two types of participation imply very different sets of power relations between the state and development agency institutions. Simply put, the extent of empowerment and involvement of the local population is more limited in the first approach than it is in the second.

The above views will influence the manner and extent to which development organizations and governments incorporate participation into their agricultural extension interventions. These can usually be placed under three classifications; contributive participation, structural participation and empowering participation.

Contributive participation involves the community at the project implementation stage, when community members are asked to participate in order to implement a pre-determined development project through their contribution of either labour, cash, time, materials or a mix thereof. Participation in these types of projects is seen as a means to deliver an end goal, generally determined by the project planners or donors. Examples of these projects include road construction, canal rehabilitation and other infrastructure building projects where villagers contribute their labour to achieve a particular goal. Contributive participation in agricultural extension projects would involve the

community members as passive recipients of agricultural information, participating in the project by virtue of their attendance in the information seminars. In this sense the term 'beneficiary' gives participation a functional meaning. Villagers are compelled to participate in an identified project by virtue of the perceived benefits stemming from that intervention. Other projects are more explicit. For example, many food for work projects often 'encourage' local people to participate in a building project by exchanging food for their labour. Participation in this case revolves around local people selling their labour cheaply to the project planners.

Structural participation involves the creation of various mechanisms and community organizations to facilitate participation in particular projects. For example, the development of local farmer organizations may be involved in helping to define needs and priorities of the community and the monitoring of development activities. These local level organizations have traditionally been created to assist in the implementation of agricultural development projects. This assistance, takes the form of facilitating the collection of information, the dissemination of information, and may even involve offering feedback to project planners. Structural participation allows the development agent to use community organizations to achieve particular development goals that have already been identified. Structural participation taps into community resources in an attempt to make development interventions more effective, efficient and respond to various social, cultural, political and economic circumstances in the village. It is important to note however, that the extent and depth of participation is limited within

defined parameters. Structural participation, like contributive participation, is promoted by external agents with aims of achieving certain goals. The objective of participation is therefore, a means to deliver development interventions more effectively. In a recent survey it was learned that many government and development organizations "felt that participation simply implied local people doing what planners wanted" (Pretty and Scoones, 1995:159). As Chambers points out this constitutes participation in as much as 'they' (local people) participate in 'our' projects (Chambers, 1995: 30).

In both above examples, participation is passive. Participation is used as a means by which to download responsibilities for carrying out specific development initiatives onto individual members of the community. At the same time, these initiatives provide little opportunity for villagers' input in project identification, design and decision-making. The outcomes of these interventions often have little relevance to the local needs, and have failed to establish community control over decisions which effect the village.

Consequently, "outsider" projects are often viewed with suspicion and result in a lack of interest in these projects and an ineffective use of available development resources (Pretty and Scoones, 1995:195).

Moreover, the mobilization of community participation in these types of projects has allowed governments and mainstream organizations to use the rhetoric of participation to achieve certain development goals more "efficiently", by devoting less resources to their implementation (Nelson and Wright, 1995: 3). The World Bank, along with national

governments, have appropriated the language of participation, self-reliance and self-sufficiency as concepts which could counter some of the more damaging effects stemming from structural adjustment policies, which moved functions from the state to the private sector. Structural adjustment policies were accompanied with an emphasis on 'community' and 'family' taking on welfare responsibilities previously ascribed to the state. The crucial difference between this interpretation of self-sufficiency and earlier ideas of self-reliance promoted by grassroots NGOs²⁰ was that this work was now un-resourced and decision-making was still held in the hands of professionals.

Empowering participation departed from the above conceptualizations and embraced participation as an end. It recognizes participation as a process through which stakeholders influence and share control over development initiatives, decisions and resources which affect them. Moreover, it recognizes the importance of empowering community members, to make real choices concerning their own development, through mechanisms which allow villagers' voices to be heard and enable them to take control of the projects themselves. Chambers (1995: 34) describes this process as "handing over the stick", where development experts transfer power to those with everyday expert knowledge such as farmers, and other resource managers in the community. Participation is seen to be a way to access indigenous knowledge for agricultural development.

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²⁰ Self-reliance was promoted by grassroots NGOs in the 1970s as a reaction against the failure of the post-colonial state's ability to provide services to the poor. NGOs argued that people should not be dependent on the state, but through participatory action research (PAR), define their own development (Fals Borda and Rahmann, 1991). Development, it was argued, should help people generate more self-sufficiency rather than have them depend on top-down state provision of services.

The above form of participation, focusses on the process of participation itself as an end goal, whereby self-esteem, confidence and solidarity are developed and conscientization is achieved among villagers. As the FAO's Plan of Action for People's Participation in Rural Development (1992) describes, it is dynamic form of participation, responding to the local needs and changing circumstances of specific villages. Aspects of contributive and structural participation are still relevant in this approach but a transfer of power is required to constitute an empowerment approach whereby community members participate at every stage of the development process.

Embracing an empowerment approach in agricultural extension projects implies that participation is not merely an ingredient to achieve pre-determined objectives, it is a strategy which aims to achieve structural transformation towards long term improvements in rural development.

Central to this approach is a commitment to redistribute power, so that people, who traditionally have not been included, participate fully in the development process. This implies that those who have held control of power (generally knowledge and resource control) must relinquish some of their control to others. Participation as an empowering process means the loss of centralized control and the proliferation of local diversity. The powerful are therefore threatened with the loss of power.

The roles of dominant uppers [those who hold power] have then to change. From planning, issuing orders, transferring technology, and supervising, they shift to convening, facilitating, searching for what

people need, and supporting. From being teachers, they become facilitators of learning. They seek out the weaker and poorer, bring them together, and enable them to conduct their own appraisal and analysis, and take their own action. The dominant uppers 'hand over the stick', sit down, listen and themselves learn (Chambers, 1995: 34).

The main objective of agricultural extensionists interested in empowering participation, is to engage in a dialogue with local populations in order to learn from the farmers themselves, and provide them with the capacity to exert control over their agro-ecosystems in an effective manner. This entails a participatory process represented by an interchange of views about how to solve a mutually agreed upon problem among community members themselves as well as professionals. Ultimately the relationship between agricultural "experts" and the local population is to be reciprocal in nature, such that local people's knowledge, practices and beliefs about agriculture are "integrated" with professionals' knowledge and beliefs about agricultural development. It is expected that through mutual cooperation, the most effective agricultural interventions can be developed and implemented. Development interventions which fail to absorb these goals, often end up creating dependencies where organizations deliver pre-set packages of professional advice, materials, management, and everything else that the village requires, except the self-determination which is crucial for human development (Curtis, 1995).

It is important to note that participatory processes cannot occur in isolation. They must be supported with adequate resources (both material and human). Only if sufficient resources (such as land and irrigation) are at the disposal of actual participants, can participation truly enrich individuals and enhance the prospects of better outcomes.

Despite the heralding of participation in rural development, as a means of building autonomous capacity in the community, the nature of participation which has historically characterized agricultural development programs has been limited to the first two types - contributive and structural participation. Communities have participated primarily at the level of receiving benefits (free agricultural inputs), attending agricultural seminars, and participating in fundraising decisions on how to raise money for activities which planners have decided upon. The primary factors influencing this outcome have been the difficulties in overcoming the constraints to participation and empowerment.

4.4 Constraints to Participation and Empowerment

This paper has argued that farmers must be empowered (putting the last -first) if we are to improve sustainable agricultural and research and extension strategies. However, the implications of this reversal or transfer of power from outsiders to insiders is a bit more problematic in reality than simply encouraging more farmer participation in agricultural interventions (Scoones and Thompson, 1993). It is increasingly recognized that the need to incorporate local farmers' knowledge must merge with strategies for empowerment.

To explain the direction of change it is necessary to introduce power into the equation and explore the relationship between the character of domination by certain groups and the evolution of discourse... No knowledge system can exist in a cultural, economic or political vacuum. Knowledge of any form, like the language systems through which it is transmitted and transformed, must always confront other knowledge systems, whether they are those of development agents or neighbouring societies. It is on these 'battlefields of knowledge', through a dynamic process of contestation and assimilation, that innovation and knowledge creation operate. And it is in this dynamic social setting that research and extension is practiced (Ibid:25).

The challenge for agricultural development is to transfer the hitherto ignored needs and priorities of resource-poor farmers to the top of the development agenda and promote the role of farmers as capable agents of change. This will require that farmers be equipped with adequate access to information, resources, skills, education, and opportunities which will help them to help themselves. Agriculture, in this sense, is situated within the overall context of the development process whereby people are empowered to lead economically productive and socially satisfying lives. As outlined in the previous section, empowerment here is identified as a process wherein farmers can increase their own capacity to exert control over their own lives and agricultural development in particular. This implies that if 'empowerment' is going to signify anything more than naive tokenism it must integrate the voices and knowledge of farmers into contemporary discourse of agricultural development - and herein lies the difficulty.

Local knowledge and knowledge systems do not represent a readily accessible stockpile waiting to be uncovered by researchers, incorporated into projects, or implemented. As Scoones and Thompson correctly note;

knowledge is multi-layered, fragmentary and diffuse, not unitary and systematized. It emerges as a product of the interaction and dialogue between different actors and networks of actors with conflicting loyalties who negotiate over 'truth' claims and battle over contrasting images and contesting interests (Scoones and Thompson, 1993:i).

This points to a weakness of the notion which suggests that increased participation of resource-poor farmers will simply unlock access to local knowledge which can then be

utilized to design and implement various sustainable agricultural interventions. This notion disregards the reality that all knowledge must be interpreted and translated and represented by other knowledge systems (van Dusseldorp and Box, 1993).

Agricultural interventions which seek to incorporate local knowledge and participation must inevitably address questions of power and influence, particularly when they are attempting to bring into the mainstream a group that has hitherto been excluded. This is not an easy task owing to the difficulty in calibrating two or more different knowledge systems in order to establish a dialogue between 'insiders' and 'outsiders'. Scientists and farmers often have different worldviews due to educational and cultural backgrounds. Scientific rationality adopts a voluntaristic worldview and suggests that people can understand and control their environments. In contrast, the worldview of farmers often holds that their environment "is controlled by powers beyond their reach and use rituals and offerings to please these powers"(van Dusseldorp and Box, 1993). Therefore these groups often have different explanations for various phenomena. The development of this communication environment is therefore essential in order to understand the conditions for sustained technology innovation.

A major constraint to the development of a workable communication environment between outsiders and insiders is what Chambers has referred to as "normal professionalism". This suggests that agricultural and development experts tend to privilege ideas of scientific specialization and reductionism which inculcate attitudes of

superiority in those with formalized education (Eyben and Ladbury, 1995). This 'normal professionalism' oppose qualities required for participatory-ecological approaches.

Typically [development] professionals are single-disciplinary, work largely or only on research stations, are insensitive to diversity of context, and are concerned only with themselves generating and transferring technologies. Their beliefs about farmers' conditions and priorities often differ from farmers' own views (Pretty and Chambers, 1993:9)

Another problem of some participatory approaches is that they tend to view the community as a homogenous entity. Consequently, the input of some village members (primarily the better educated) is taken to be the expression of the entire community. This often means that marginalized groups such as women and the very poor are not represented within the participatory process - neglecting their knowledge and possible contributions to the intervention. As discussed in chapter two, issues of poverty and low social status often lie at the root of agro-environmental problems. It is therefore manifest that we recognize the inseparability of sustainable agricultural development issues and resource-poor farmer empowerment. Previous agricultural development initiatives, such as the Green Revolution, have illustrated that there may be many different interests and positions within any village regarding agricultural intensification programs, depending on age, gender, class, race, etc.

This brings us to the question of how these interests are articulated and whose knowledge is identified as 'true' when it is being interpreted by outsiders. Some Marxist authors, notably Gramsci, have suggested that the weakest members of society, such as

resource-poor farmers, may not even be aware of what they really know or need, due to the creation of a false consciousness by the hegemonic powers in a given society. This argument is based on the principle that elites within a society tend to impose their own image of 'truth' on both the behaviour of subordinate classes and in their consciousness.

...[E]lites control the "ideological sectors" of society - culture, religion, education and media - and can thereby engineer consent for their rule. By creating and disseminating a universe of discourse and the concepts to go with it, by defining standards of what is true, beautiful, moral, fair and legitimate, they build a symbolic climate that prevents subordinate classes from thinking their way free. In fact, for Gramsci, the proletariat is more enslaved at the levels of ideas than at the level of behaviour (Scott, 1985: 31).

This suggests that only the interests of the elites will be articulated in development plans, due to the seemingly impossible task of representing the views of the subordinate classes and the difficulty of investigating local knowledge systems. If this is true, it would make it very difficult in this instance to undertake research to better understand local knowledge and would suggest significant implications for attempts to incorporate farmer participation in agricultural extension programs. Outside experts may simply dismiss the ideas of peasant farmers as being unscientific and illogical.

Scott (1985) challenges this idea, reaffirming that there exists a multitude of actors and interests among farmers and other groups, arguing that these groups continually negotiate meanings of knowledge and other 'truths' through resistance and deviant subcultures. Scott concludes that while hegemonic ideology may make it appear in public that there is overall compliance with these ideas, there persist 'everyday forms of resistance' which

reveal the hidden transcripts of the weak exposing their real interests and priorities.

The empowerment approach recognizes that resource-poor farmers' capacities, abilities and strengths are situated within political and economic structures which favour elites and place a supremacy on western positivist science which cannot be undone by participation alone. However, empowerment strategies may help to overthrow dependence-based power relations through a conscious incorporation of resource-poor farmers' knowledge into the agricultural development process.

Incorporating the voices of resource-poor farmers into agricultural development interventions is an inherently political process.²¹ It demands a deliberate and conscious redistribution of power, so as to create space or 'room for manoeuvre' for resource-poor farmers to determine priorities and influence the direction of change (Long, 1989). This approach implies a situation where decision making power is located within non-elites and participation is both voluntary and real. It is not enough to promote a farmer-first strategy and attempt to use indigenous knowledge as an add-on component to extension strategies. If the development and legitimization of local knowledge is to benefit rural communities, it must include empowerment strategies for the weakest of the weak. Only when resource-poor farmers are empowered to "win their right to speak" (Friere,

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²¹ David Lehmann cautions against interpreting the lives of the poor. "...[S]ince the voice of the poor is the voice of the voiceless, many are those who will proclaim that they have privileged access to that voice, that they have grasped the truth by means of an intuition which is simply not available to others" (Lehmann, 1990: 185).

1985:72), can the structures which maintain their dependence, and consequently limit the effectiveness of agricultural interventions, begin to be transformed.

4.5 Participatory Development in Sustainable Rural Development: Power

Participation, if it is to be more than a palliative, involves shifts in power. These power shifts occur within communities, between farmers and scientists, villagers and policy-making and resource-holding institutions, and even within the structure of those organizations. This chapter has advocated the empowering approach of participation in pursuing the objectives of sustainable agricultural development. Effectively implemented, the empowerment approach can have a positive impact on the long-range welfare of the community, and encourage responsibility, initiative, decision-making and self-reliance at the village level, that builds upon the human spirit.

Conventional agricultural extension programs have rarely encompassed a participatory approach at any level. When, participatory approaches have been applied in this area, they tend to involve either contributive or structural forms of participation, neglecting the demonstrated necessity for participation to be empowering. Consequently, these initiatives have failed to achieve their potential. The reasons for these failures are many but include the following:

- **Instituting dependency.** Institutions and development officials have made their external roles indispensable to local villagers by centralizing development decision-making under their control. Villagers come to rely on the outside experts

and undermine their own skills and abilities to solve their own agricultural problems

- **Project "blueprint" focus.** Participatory activities are often carried out by development agents and governments as "projects" with specific boundaries in space and time. When the project ends, local people have not always been adequately prepared to take on the task of maintaining services and are therefore unable to sustain the initiative.
- **Contradictory policies.** Projects invite villagers to participate in projects by contributing resources, labour and time, but limit their involvement in the areas of project design and implementation, resulting in a relationship of mistrust and the eventual withdrawal of local community participation.
- **Inflexibilities and institutional rigidities.** Many development organizations specialize in particular areas of development (ie. public health) and therefore identify these areas as community priorities which may conflict with the communities' own sets of needs, such as developing income generating projects. The differences in priority identification and the inability of the external agents to respond to the communities perceived needs often results in an environment of indifference among community members, which limits their involvement and support of externally promoted development initiatives.

This chapter has argued that many of the above problems could be eliminated or lessened through the application of a participatory and empowering development process.

Empowering participation differs from the above in as much as it implies community ownership and control of a given development intervention. As Fowler asserts, "In the end, rural people must own induced social development processes and benefits if they are to be sustained" (in Pretty and Scoones, 1995: 165). It assumes that communities, given the opportunity, have the ability to organize and manage resources effectively to bring about desired change. The role of the outsider is a facilitative one - to strengthen the capacity and management of local people and broaden community participation.

There exists growing support for rural development interventions which attempt to empower local villagers to take control of their own development. A survey of rural development projects undertaken by Krishna et al.(1997:2) note:

[Our survey] shows us that approaches to rural development that respect the inherent capabilities, intelligence and responsibility of rural people and that systematically build on experience have a reasonable chance of making significant advances in improving people's lives. A critical success factor is creating organizational capabilities at local levels that can mobilize and manage resources effectively for the benefit of the many rather than just the few.

It may be useful here to conclude with an inventory of factors which constitute genuine participatory projects. In identifying characteristics of truly participatory development interventions, several important patterns begin to emerge as fundamental principles of participatory development. These include:

- **Village participation in diagnosis.** The involvement of local people in the identification of needs and priorities must preclude the project design stage of development intervention. This suggests that project planners cannot design strategies and then approach communities for their decision on whether they would like to host the initiative. Agreement to host an intervention does not constitute active participation.
- **Empowerment as an end.** The emphasis of the initiative should be placed on empowering the community to assume control over their own development. This includes equipping them with adequate training, skills and resources to carry on the intervention once the outsider withdraws from the community.
- **Mechanisms for broad-based participation.** The initiative should include mechanisms to increase participation among the most marginal in the community using a bottom-up education and empowerment approach so as to avoid domination by traditional elites within the community.
- **Project ownership.** The villagers should come to see the development initiative as their own and take responsibility for its maintenance. In some cases this may involve the transfer of resources (such as land) from the state to the village which

will assume autonomous control.

- **Decision-making.** Farmers or other villagers must be included in decisions at all levels of the project, from identification, to implementation, to project monitoring and evaluations. This process may be gradually introduced as the community takes on more responsibility and accepts the possibility that the decisions taken by the community may not always be 'correct' according to conventional understandings of development.

Of course every project will differ in its interpretations of some of the above principles and they are not meant as iron-clad conditions of empowering participatory development projects. It does however, provide a useful framework for our case study analysis of the participatory IPM-FFS program in Cambodia which is examined in chapter 6. The case study will explore many of the issues identified here in determining the extent of farmer empowerment within the IPM-FFS initiative, and how empowerment may assist in the achievement of the goals of sustainable agricultural development. Before, we approach the case study, the next chapter examines some of the methodological considerations of the case study analysis.

Chapter V

Evaluation Concepts and Methodology

5.1 Perspectives for Evaluating IPM-FFS Program²²

Program evaluation intends to assist the improvement of particular services. A more specific definition of program evaluation is supplied by Posovac and Carey (1989:3);

Programme evaluation is a collection of methods, skills and sensitivities necessary to determine whether a human service is needed and likely to be used, whether it is sufficiently intense to meet the need identified, whether the service is offered as planned, and whether the human service actually does help people in need without undesirable effects.

The broad overall purpose of program evaluation is to provide feedback to human actors. Commonly, two main types of evaluations are distinguished in the literature; formative and summative types of evaluations. Formative evaluations aim at providing feedback to improve a program, whereas summative evaluations provide information for decision-makers to decide whether to continue to fund or terminate a project (Scrivens, 1980). On the surface, policy makers and managers appear to be primary beneficiaries of evaluations. They are the source of questions and the audience for the evaluation results. Objectives are stated in advance and expected outcomes serve as the standard for measuring a program's success and effectiveness. However, this often leaves the

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²² Decisions about what problem to study and which methods to employ, arise not only from adopted theoretical frameworks but also in the ideology, personal identity and 'material' social location of the researcher. Researchers have become increasingly self-conscious about their location in the research process and the social relations within which they produce knowledge. Anthropologists and feminist researchers have adopted the principle of 'self-reflexivity' for inserting themselves into the research process. This chapter follows on these examples and deliberately introduces the personal pronoun I into the research design. (See for example; Mbilinyi, 1992 ; Hawkesworth, 1989 ; Schrijvers, 1995 and Scott, 1985).

supposed beneficiaries out of the formulation.

For example, an evaluation of the Training and Visit extension system undertaken by the World Bank focused on farm level effects such as yields, production and farm income and tried to show causal relationships between these effects and extension services. An important variable for process evaluation was the number of visits by the extension worker to the farmers, while no attention was paid to more crucial aspects such as farmer practice and decision-making leading to the farm level effects measured (Murphy and Marchant, 1988). A more recent strategy considers inputs and outputs of a particular extension strategy using a cost-effectiveness approach which suggests that the costs of extension activities be lower than the production increases stemming from the adoption of new technologies or methods being extended (Shwartz and Kampen, 1992). However, the adoption of new technology is not necessarily a good indication of effects, since a farmer may have to have access to other factors (such as credit, markets, etc).

Furthermore, this above approach fails to encompass an understanding that objectives for environmental sustainability, poverty alleviation and empowerment require different indicators and that there are unavoidable tradeoffs between these and aggregate production objectives. To better understand these objectives evaluations must take an actor-oriented approach to recognize that different stakeholders may have multiple goals.

With the growing consideration of multiple stakeholder groups, the context for evaluation practice and evaluation utilization has become more important. Hence,

formative evaluations are encouraged which include a higher degree of participation of beneficiaries in program evaluations and incorporating evaluations within program activities (Feurstein, 1986). This approach leads to more reliable and usable evaluation outcomes, and program enhancing self-evaluations by the beneficiaries themselves.

In contrast to conventional agricultural extension programs, the Cambodian National IPM Program's principal aim is that trained farmers become more able to take considered decisions with respect to their crop protection strategies. According to IPM-FFS background documents the key is that farmers make "informed decisions". Farmers are expected to incorporate a set of principles not a set of recommendations. These principles include; growing a healthy crop, observing the fields regularly, conserving natural enemies and farmers becoming IPM experts. The specific goals for the National IPM program in Cambodia include the following:

- the establishment of an on-going FFS program at the village level;
- training based on principles which farmers understand, instead of instructions or recommendations which farmers must follow;
- development of community organizations (eg. community rat control);
- strengthening of links with development and research, and;
- the promotion of activities that involve knowledge, understanding, and management as well as technology. (FAO, 1996)

The non-formal education approach of IPM-FFS incorporates farmer participation as an essential ingredient towards achieving these above goals. The implicit assumption of the IPM-FFS program is that by empowering farmers to participate in their own development, the program would result in farmers embracing methods which would

avert a possible "crisis caused by the injudicious use of insecticides and increase the efficiency of limited agricultural inputs available" (FAO, 1996). Simply stated, increased participation of farmers through the IPM-FFS approach in extension results in more sustainable forms of agriculture. From this background, the research question was developed to determine whether the IPM-FFS model in Cambodia has been successful in empowering farmers to promote sustainable agricultural initiatives in Svay Teap.

In approaching the research question I was faced with a number of issues and challenges. First of all, I was left with the dilemma of how to measure impact of an agricultural extension model such as the IPM-FFS. The impacts of qualitative outputs, such as changed knowledge and attitudes, are often very fragmentary and difficult to record in the usual quantitative research framework. Qualitative change requires that we use qualitative measures of success. However, this is rarely done in agricultural extension evaluations because of time constraints of project field staff and demand from project donors for "real" indicators of project success. These "real" measures are inevitably a quantifiable measure (ie. increase in production yield, number of bicycles, etc.). This type of analysis assumes a clearly identifiable cause-effect relationship. However, in most projects which deal with resource-poor farmers, the complexity of decision-making, the structure of the household and village level social, economic, political and ecological environment mean that such linkages are difficult to conclude. Even the World Bank has recently acknowledged that it is impossible to quantify the impact of extension, or to link cause and effect, since extension is but one of a number of factors in farmer choice for

new methods or technology. One cannot estimate nor predict "what would have been the situation without the extension investment" (OED, 1994).

Given the inadequacies of quantifiable data in this type of analysis, I decided that a qualitative analysis would be more useful in uncovering the effectiveness of the IPM-FFS approach in Cambodia. This decision led to my next challenge. The latitude of interpretation of results is much wider when using qualitative results as opposed to quantifiable inputs. Whereas quantifiable research may involve simply measuring yield or income, a qualitative approach would entrust me to interpret the effects of the intervention more broadly. Yet, how qualified am I to interpret the success of an agricultural initiative in a rural environment in Asia? I was an outsider, coming from a Western, middle-class, urban environment. I had no background in agronomy. I had never been to Cambodia before, and I had no historical scope of the local environment for comparison. I had to ask myself what "claims to know" did I have in evaluating an extension program which would involve me interpreting what I saw or experienced, to be an accepted "truth". I had the potential to entirely misinterpret or misrepresent the experiences of local farmers based on my own cultural understanding which was grounded in western thought and culture. What would prevent my research from being anything other than what some critics have termed "discursive colonialization" (Mohanty, 1991) whereby western academics base their findings on their own apparently superior eurocentric biases and assumed interpretation of events.

In order to counter some of these potential hazards, I committed myself to attempt to incorporate and integrate the voices of the local farmers themselves into the research and analysis. This approach mirrored the ideals of IPM-FFS model in as much as it encouraged greater involvement of local farmers in the research process. I have argued previously that if development interventions are to be 'successful' they must include and involve the people who are meant to benefit from these interventions. It is therefore only natural that I carry this same philosophy into my own field research. I hoped that by involving farmers in my research I would be able to capture their perceptions and analysis of the IPM-FFS extension program. Wherever possible I would allow them to voice their concerns and raise issues and try to represent them as accurately as possible in my research. Above all, I was committed to listening to the farmers and learning from them and their experiences. As an outside researcher I would adopt the perspective that I had much to learn from the farmers and that if I could adequately and sensitively represent their voices, this may compensate for my own deficiencies. Faced with all of these concerns, I decided to adopt a participatory research methodology which would address many of the above objectives.

5.2 Participatory Research: An Alternative Approach

Participatory Rural Appraisal (PRA) evolved in the early 1990s as a response to the dissatisfaction with conventional research methods associated with 'development tourism' (brief visits from urban professionals) and the poor record of questionnaire surveys which privileged the view of non-beneficiary outsiders. PRA has been described as a way

to "enable local (rural or urban) people to express, enhance, share, and analyze their knowledge of life and conditions, to plan and act" (Chambers, 1994a). PRA and related approaches endeavor to be farmer-centred, involving farmers throughout the research process, giving voice to their own appraisal and analysis. The approach seeks interactive learning, shared knowledge and flexible but structured research analysis (Rocheleau, 1994). With PRA, appraisal and analysis are carried out by local farmers themselves with 'outsiders' learning by, with and from them. This methodology fits well with the conceptual framework of the study as it places the researcher closer to where decision-making occurs and situates farmers themselves squarely within the research project where they can participate actively.

Participatory research approaches differ significantly from conventional methodologies in that there is a reversal of power from the researcher to the participating farmers. Conventional methodologies adopt a positivistic approach to research which accepts the existence of a single scientific truth, explainable through simple observation and quantification by experts. This approach privileges the role of the expert in the research process. As Cornwall et al. (1993:4) explain,

The 'embedded models' of conventional agricultural science define not only how research is carried out, but also the nature of the relationships between the various actors involved. The entire apparatus in Foucault's sense, of agricultural research... confirms the 'superiority' of western science and scientists; and the privileged solutions they offer. Those in higher ranks define what is worth knowing and deploy others to make this known to those who lack it.

Consequently, the researcher's frame of reference may be severely constrained within a pre-determined view of what is important. Mainstream approaches which set the parameters for research are limited in their ability to respond to the concerns of local farmers (Farrington, 1988; Hienrich, 1993). As a novice researcher with very little experience of rural life in Cambodia I wished to be particularly sensitive to this potential and struggled not to place pre-determined parameters within my research which would force people to answer questions which I alone had deemed relevant. This would involve a reversal of power whereby the researcher would learn from local people, through on-site and face-to-face meetings so as to gain insight from their local knowledge and reality and reflect this in the research.

The process of learning in this environment is not instinctive, it requires that the researcher establish a rapport²³ with the local farmers which encourages a cooperative approach to social investigation. As with any human relationship, establishing a rapport can be achieved in numerous ways. In the context of a research project this can be achieved by relaxing the research process, taking time to listen rather than lecture, getting involved in local (non-research) activities, being unimposing instead of important, and expressing a desire to learn from the research participants. The objective of these rapport building activities is to transfer power to resource-poor farmers in a manner which allows them to influence control of the research project and result in the

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²³ 'Rapport' implies the trust, agreement and cooperation necessary for the pursuit of participatory approaches to development. (Mosse, 1994)

collection of data which is more reliable and relevant to community interests.

Another important implication of power reversals in PRA, is that the research generated is owned by the community itself, transforming the traditional researcher-subject relationship from a potentially exploitive relationship, to a reciprocal sharing one. This requires that participants validate and discuss research results and contribute dissenting opinions before they can be accepted. As a cooperative research methodology it is important that participants be involved throughout the research process and are empowered to express their voices within the final research.

The empowering aspects of the research process are significant, because PRA is also characterized by its emphasis on supporting local social change through applied research (Rocheleau, 1994). Research which contributes to the academic literature is useful for scholars and academics but is often exploitive and contributes very little to the participating community itself. In PRA, the emphasis is on using the information which was collectively gathered to result in action which will benefit the community. The research must therefore create a space for the participants to articulate and assert their political agency to take action and make desired changes in their community.

While participatory research methodologies such as PRA are praised by some for its people-centred approach and its insistence on involving participants at every level of the research process, there have been some criticisms and difficulties associated with

participatory-based methodologies.

David Mosse (1994) illustrates that despite the best intentions of PRA researchers, the information they gather may be information predicated on existing social and power relations within a community. This may lead to informants filtering or censoring their expressed opinions or beliefs to outsiders in accordance with local norms. For example, poorer villagers may refrain from publicly expressing any disappointment about being marginalized in a particular development intervention because it is 'normal' and village norms imply that they have no claim to increase their involvement. Women may also refrain from open and honest participation in a research study, based on what is deemed acceptable behaviour in public by the elite in the community (Long and Villareal, 1995).

It is therefore essential that researchers become aware of these constraints and incorporate mechanisms within the research design to address them. The danger within a PRA methodology is that it can result in a rather simplistic research approach. As Pottier (1991) remarks, the implicit message within PRA approaches is "just ask, they know, and they are your friends". The creation of knowledge using PRA methods is less facile.

The information manipulated through PRAs is often of very different kinds, involving mixed combinations of fact and value, consensus and difference, openness and sensitivity, the public and the private, etc. Even where we are sure of the questions we may not adequately be able to interpret the answers (Mosse, 1994).

Ultimately, all information is shaped by relations of power. The knowledge creation

process within participatory methodologies offers varying levels of accessibility to various sections of the community based on gender, age, education, kinship, etc. Despite this there is often a tendency among PRA researchers to reduce the community to a homogenous grouping, accepting the idea of a community consensus (Thrupp, 1994). Perceived inclusiveness and participation alone are not adequate to guarantee 'truer' results. Indeed, participatory methodologies which adopt a populist focus on group dialogues rather than on the individual can tend to over-represent the general over the particular and lead towards a unitary view which ignores difference (Cornwall et al., 1993:3). Thus PRA can create a context where dominant views can be mistaken for consensus while the views of socially subordinate groups are suppressed. In order to overcome these unifying tendencies of creating a "them". I planned to seek out differences within and among social groups and learn how these differences influence knowledge creation. I planned to achieve this by combining group and individual interviews in the research design in the context of a short term PRA study. Recognition of the above constraints would inform my research framework and serve as a useful guide as I approached my research question based on a participatory methodology.

5.3 The Research Framework: Actual on the Ground Decisions

As I reflect on the research framework, the poetry of Robert Burns comes quickly to mind. In particular the couplet "*the best laid plans o' mice and men gang aft agley*" would seem to be an apt title for the actual research process which I describe here.

In approaching my research topic I completed an extensive literary review of IPM, farmer first agricultural extension and the IPM-FFS program in particular. In the course of my research I learned that the IPM-FFS approach had received some very favorable reviews in Indonesia during the late 1980s which Indonesia was encountering massive crop infestations of brown plant hopper predators in rice. The insect was able to develop a resistance to the chemical pesticides being used and flourished, destroying large percentages of rice crops (Pincus et al., 1992; Rolings & Van der Fliert, 1991). In 1990 the government sought to reduce farmers' dependence on modern chemical pesticides for both economic and health reasons, and developed, along with the FAO, a nationwide IPM program based on education and management techniques. The knowledge intensive program was extended to farmers using an IPM-FFS approach (see chapter 3). Surveys after the implementation of the program indicated that Indonesia managed to achieve many benefits within a short period. Within the space of five years, Indonesia's rice harvest had increased 15 percent, at the same time that pesticide use decreased 60 percent (Ibid.: 452). Concomitantly, with the elimination of toxic chemicals in the environment, rice paddy fish returned, providing an important protein component to the diet of Indonesian farmers. Due to Indonesia's success, it is often viewed as a model for other countries considering reducing their dependence on pesticides.

One thing which stuck out in the success of the Indonesian program was the success of the implementation strategy of the IPM-FFS program. I immediately became interested in whether this implementation strategy, which encouraged farmer participation in the

learning process, could produce similar results in other areas of Asia. I therefore searched for other areas in Asia which were using this strategy and discovered that Vietnam and Cambodia were currently implementing IPM programs. I chose to pursue Cambodia primarily because I had read very little on agricultural research in this country and the idea of making a 'worthwhile' contribution to its development appealed to me. I had also contacted the field office director of the International Rice Research Institute (IRRI) in Cambodia and he suggested that an independent evaluation of the IPM-FFS program was warranted²⁴.

Once I had decided to pursue my field research in Cambodia, I set out to find an appropriate organization to host my research in that country which proved to be both time consuming and expensive, with faxes, letters and telephone calls going to numerous organizations. While I waited for responses, a contact in Ottawa suggested that I contact Dr. Agnes Rola at the University of the Philippines at Los Banos, who had worked on numerous IPM programs²⁵. I sent my proposal to Dr. Rola and she invited me to come to the Philippines to gather information and look at IPM programs there, in a less threatening environment, before heading off to Cambodia. Furthermore she assured me that SEARCA (Seameo Regional Center for Graduate Study and Research in Agriculture) could facilitate my research in Cambodia as they had a close working relationship with

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²⁴ Personal communication with Dr. Gary Jahn (Cambodia-IRRI-Australia Project) April, 1996.

²⁵ Dr. Rola is an Assistant Professor of Agricultural Economics at UPLB and Program Leader of Social Science and Policy Research at the Philippine Rice Research Institute. She has conducted numerous research projects on field implementation of IPM in Southeast Asia. (See Bibliography).

the FAO Intercountry IPM Program Director. The Director of SEARCA, Dr. Percy Sajise had informed the FAO-IPM program of my plans while he was in Cambodia on a visit in October 1996 and confirmed this arrangement. With these arrangements in place, I departed for the Philippines in September 1996.

Upon arrival in the Philippines, I continued my literature research both at the University of the Philippines at Los Banos (UPLB) and at the International Rice Research Institute (IRRI), headquartered in Los Banos. I interviewed academics, researchers and IPM practitioners both at IRRI and UPLB, and attended an international symposium on IPM which brought together experts from across the Philippines. These activities helped to give me a better understanding of IPM and gave me some insight in how it was being implemented in the field.

During the course of my research I was confronted with two different methods for IPM implementation, one supported by IRRI called the "simple message"²⁶ approach and the other supported by the FAO-IPM office in Manila which employed the IPM-FFS strategy. The animosity between these two organizations in IPM strategies is intense. I learned very quickly that the battle between these two methods is very political and that my research of evaluating one of them was viewed with some suspicion by officials at the

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²⁶ The "simple message" approach was an extension method developed by Dr. K.L.Heong to encourage farmers to decrease pesticide use. It is based on encouraging farmers themselves to experiment with alternative crop protection strategies through a series of 'simple messages' distributed by extensionists scientists (eg. Resist spraying on green leaf folder in first 40 days).

FAO-IPM office, particularly after they learned of my discussions with scientists at IRRI. While I briefly considered a comparative study of the two methods (which has never been done), I realized that this would involve more work than I could achieve as a single researcher, and I also realized that I didn't have the academic clout to counter the political pressure I was already encountering. I therefore decided to continue on my original plan and contacted the FAO-IPM official in Cambodia to get feedback from him on my detailed project proposal and arrange logistics for my arrival. On October 17, 1996, I received back a response from the FAO official encouraging me to reconsider my visit to Cambodia, citing reasons of "relative insecurity, poor communications and general low standard of facilities". He was also clear that he thought my approach to be too critical despite the fact that I remained open to suggestions and changes.²⁷ The future of my research was in jeopardy and I moved quickly into crisis control.

SEARCA Director, Dr. Sajise who set up the field research placement and approved my research proposal did not understand why there was a sudden change and attempted to contact the FAO-IPM Director in Manila, but unfortunately he was in Rome. Dr. Sajise was reluctant to pursue the matter too forcefully as the FAO is a major contributor to SEARCA projects. According to UPLB academics and IRRI scientists the FAO-IPM program officials are very reluctant to allow "researchers onto their turf". I was somewhat comforted to learn that both the Senior Entomologist at IRRI and the Head of

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²⁷ The Oct. 17, 1996 letter states "it's a shame that you seem so set on cooking up everything from the cloisters".

the Social Sciences Division had encountered similar obstacles to mine in attempting to gain access to FAO-IPM led projects. Despite the fascinating glimpse this gave me into the politics of research, this did nothing to solve my dilemma. I had failed to consider the implications of my research for the implementing agency and naively assumed that they would be open to an independent evaluation of their program. However, it was clear to myself and others, that the FAO-IPM team in Cambodia perceived my research as being both patronizing and threatening, particularly since the World Bank was considering an application to expand the program.

I later learned that due to the nature of the IPM-FFS program and its non-qualitative objectives, program officials are often nervous about external studies which may look for quantitative achievements. In addition, there is a sentiment which surrounds the FAO-IPM program, which contends that only insiders (or friends) can provide an adequate analysis of the program due to its far reaching objectives which may fail to be viewed by outsiders. More than once I encountered descriptions of the FAO-IPM organization characterizing it akin to a religion during medieval times where only the high clerics could read the holy scriptures giving them a privileged access to God. Whatever their reasons, they were not about to hand over their scriptures to a perceived infidel, to be interpreted back to them. While I understood and respected the right of the FAO to deny me access to their program, I thought they had misunderstood the thrust of my proposal (a people-centred analysis) and were being unnecessarily paranoid about the results of a graduate student thesis. In retrospect, I might have been less critical with my proposal

until I gained access to the research site, but this would seem to be both intellectually mischievous and dishonest. Besides, I failed to accept the idea that I had some sort of hidden agenda or deliberative project to overthrow the IPM-FFS program. Nonetheless this brings up the aspect of research bias.

Participatory methodology does not accept the notion of entirely objective research, noting that researchers themselves play a significant role in the knowledge creation process. Participatory methods are based on the assumption of subjectivity and require critical examination of assumptions and biases through self-reflection on the part of the researcher in order to promote reliable research (Scoones and Thompson, 1993). By recognizing these biases, researchers can check themselves against putting their own preconceived notions into the research framework. My own assumption and biases were obviously laden with Western cultural and ideological references which I would have to consider when I was interpreting information I gathered from local farmers. In terms of my preconceived notions of the IPM-FFS program, I supported its non-formal education approach and its emphasis of encouraging farmers to participate in their own learning and development. While, my experiences with the political struggles in the Philippines certainly did not endear the FAO-IPM organization to me, I was conscious that I did not want this to influence my own perceptions of the IPM-FFS program. I felt comfortable that I could achieve this as long as I recorded the village level perceptions of farmers both sensitively and accurately and studied the intervention through the eyes of the individual farmers in a community.

Academics at UPLB encouraged me to continue with my research in Cambodia suggesting I find an alternative research site which would not require the FAO's involvement. With some degree of desperation and some initial contacts I gained while in the Philippines, I accepted this advice and arrived in Phnom Penh in January, 1997.

In Cambodia I set about immediately on an orientation of agricultural projects. I met with government officials, officials from the National IPM Program and various NGO's working in the agricultural sector. Key informant interviews were performed in Phnom Penh with project leaders engaged in IPM programs and several NGO coordinators. During the interviews it was learned that in many cases the NGOs themselves were serving as hosts for the IPM-FFS program in Cambodia. Several NGOs who had previously hosted the IPM-FFS Program in the rural areas responded positively to the idea of studying the effects of the IPM-FFS program now that the intervention was over. Several sites were visited and the research site was selected from them.

The selection of the research site was based on the following criteria; 1) it should have previously hosted an IPM-FFS intervention; 2) it should be relatively secure; 3) it should be accessible by land and; 4) it should have the approval of local village leaders. The district of Svay Teap met all of these criteria and it is here where the study was conducted. The NGO Catholic Relief Services (CRS) had worked in this district previously and the local project coordinator, welcomed my study. CRS was the host organization for the IPM National Team when they had set up their IPM project in the

three villages in 1996. Although CRS was involved in setting up the program and paying for the intervention, they had no evaluation of the impact of the IPM intervention. The head of the CRS field office was an agronomist by profession and was very helpful in setting up my field research and assisting with some of the more technical aspects of the research. While CRS welcomed my study, they were limited in their ability to commit resources and were clear that I would be on my own once they introduced me to the village leaders. With the approval of the local village heads, the field research began.

The first priority I had in the community was to establish my role. I wanted to be very clear about the objectives of the study and illustrate that I was only interested in learning from them and their experiences. I also wanted to make certain that my presence in the community did not raise expectations among villagers. I was concerned that villagers would perceive me to be affiliated with CRS or other development organizations and that this would influence their reaction to me. As such I would preface each encounter with a farmer with a brief explanation about my research and lay out my limitations. Most villagers seemed to understand that I had no influence on development decisions in the community but were simply happy to talk to me about farming and their lives. Despite my efforts I was approached on occasion to provide medicine to families. In these rare circumstances my research assistant noted their problem and I notified CRS officials ²⁸.

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²⁸ In this circumstance I had a moral dilemma. On one hand, I could not ignore the requests of the families, but on the other hand I could not afford to have my role as a researcher transformed into that of an aid worker. Also since this research was to be 'participatory' I did not want to set a precedent of providing gifts for certain families for information while providing nothing for others. I decided that I would inform the authorities of the medical problems to insure that they received the proper care but I wanted to avoid being

Building rapport in the community was a necessary prerequisite for my research. I wanted to erase the perceived line between 'us' and 'them' as much as possible and engaged in local activities such as cage fishing and well digging. Villagers seemed to get a kick out of my eagerness to help them with their duties and seemed very relaxed and interested in our later discussions. I tried to make discussion between myself and local people as reciprocal and relaxed as possible. This would sometimes involve me answering villagers question about my life in Canada and the state of agriculture. I also took many opportunities to have a good time with villagers such as participating in spontaneous games of volleyball which were very popular in the district. These activities seemed to build up trust and goodwill among community members and myself as exhibited by the invitations to several weddings I later received. One aspect which inhibited rapport building was my the inability to stay in the community. Due to security concerns in the area, the village leaders and CRS insisted that I not stay in the village²⁹. In addition, there was no area I knew where I could stay without causing a burden to local villagers. Accordingly, I stayed in the provincial capital, Svay Rieng Town and commuted everyday to the district, about 45 minutes away by motorbike. This aspect limited my ability to observe the community at night and probably limited my ability to

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public about it. At the completion of my research I left a modest scholarship/fund with each village leader to thank the entire community for their participation. The guidelines of how to distribute the scholarship to students was left up to each village.

²⁹ It should be noted that although the Khmer Rouge soldiers did not explicitly control areas of the southeast their presence was still felt in the three communities. As I was told on numerous occasions "Phnom Penh rules during the day while the Khmer Rouge rule at night". Conflicts also erupted between the two main opposing political parties in the district and the army had been known to recruit farmers at gun point. I only encountered one incident during my time in the village which threatened my own personal security, otherwise I felt more safe there than I did in Phnom Penh.

gain greater trust among the communities as it cemented my role as an 'outsider'.

One of the largest constraints I encountered in my research was my inability to speak Khmer. While I studied Khmer briefly before arriving in Cambodia and was able to manage my way around the community, this was certainly not sufficient to conduct interviews and speak with locals reliably. As such, I enlisted the help of an interpreter who would assist me in my research and facilitate discussions. I had wanted to hire a local person as an interpreter so that this person would have a locally based understanding of issues and be comfortable speaking with rural people, but CRS officials convinced me that this would be difficult as there was a scarcity of English speaking translators in the rural areas and most of them are already working for NGOs. This scarcity was reflected in the wages offered by the NGOs where basic interpretation positions were advertised for US\$600/month³⁰. This was clearly out of my budget range. Fortunately, I had befriended a Cambodian student in the Philippines who gave me the name of a friend in Phnom Penh who agreed to help me with my study. Socheat was a university student studying dentistry, he was taking a year off and was available for the four months I required for my field research in the villages. While I was initially concerned with his middle-class background and the effects this might have on interactions with villagers, it was clear that Socheat had a very humble attitude and was at ease speaking with rural people. Indeed, like most Cambodians he had grown up in a

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³⁰ The average wage of a Cambodian government worker is approximately US\$ 20/month. Yet the salaries paid by international development organizations to local staff often far exceeds this amount, putting the government in competition with the NGOs to attract qualified candidates.

rural area and experienced life under Pol Pot in a village in the west of Cambodia.

The experience of working and conducting research with an interpreter was extremely rewarding. I learned a great deal about the importance of the relationship between researcher and the interpreter and recognized that the interpreter is much more than a tool for conducting research. The interpreter becomes an extension of the researcher and concomitantly the researcher must become part of the interpreter. There were times where I could tell that Socheat was getting tired or exasperated at the responses he was getting from the villagers. At these times I had to relax the interview (sometimes we would just stop) or carry on a less taxing topic with the villagers. I also realized the importance of giving Socheat his own voice in speaking with the villagers even if this meant that I was left out of the conversation. Gradually, we established a very good relationship and understanding between us built on trust and honesty. Ultimately, I believe this relationship helped produce an honest reflection of the villagers views despite the difficulties which normally accompany interpreted interviews.³¹

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³¹ Problems of accurate information from interpreters is highlighted in Cambodia during the humanitarian aid efforts of the late 1970s. "Interpreters were generally from the educated and wealthy classes of pre-Pol Pot Kampuchea. Thus using interpreters led to two additional problems. Unconsciously, the interpreters saw life in the [refugee] camps from their elite and unrepresentative vantage point. For instance, when asked what people in the camp needed most, interpreters would often mention bamboo. However, for the poorest refugees, wood cut from the forest could substitute for bamboo, whereas clothing, mosquito nets, and fishing nets were more useful and had no available substitutes... Even more problematic than the 'filtering' of information were the conscious attempts by many interpreters to mislead relief workers. ... For instance, interpreters would almost never admit that rice was sold in the camps, because they knew that relief organizations did not want rice to be sold. They pretended that the gold markets did not exist, that traders were not taxed by the military, that executions of alleged thieves did not occur, that skirmishes between factions had not happened. On one occasion a very cooperative interpreter ran ahead into the market and shouted out in Khmer that a relief worker was coming. Instantly the traders flung their scarves and blankets over the gallon tins of oil that had been distributed [free] the day before. (Mason & Brown, 1983)

At first, I tape recorded all interviews and discussions with villagers and transcribed these discussions every night with the assistance of Soheat. This proved to be extraordinarily labour intensive, wearing out dozen of batteries and candles as we pursued our tasks many times well into the evening. After the second week, I decided that this method was both inefficient and time consuming. Soheat and I decided that we would only record and transcribe focus group sessions. I took notes during interviews and used the tape recorder to record some of my and Soheat's impressions of the interview immediately after it finished, before walking towards the next site. I checked these impressions each night against Soheat's who made a notebook of his experiences.

Once we were in the village, our chief mode of transport was by foot. We drove into the village every morning and parked our motorbike and then proceeded to walk around to our interview locations which would often be far off the roads. Walking in the village made us instantly accessible to the villagers and some even joked that they had never seen a foreigner walk before. Land Rovers and Jeeps with various NGO and institutional titles emblazoned on the sides are the norm for Cambodia. By walking through the villages, over fields and through forests, villagers recognized that although I was not part of their community, I didn't seem to belong to the regular rank and file development institutions either. I think this helped them accept that I had no affiliation with the regular development institutions and allowed them to be more forthcoming with some of their opinions and advice on the IPM program.

5.4 Research Methods

In my original proposal I had planned to employ a host of participatory methods to assist me in my research. These included various visualization techniques, rankings and popular theatre techniques (see Cornwall et al., 1993). However, once I arrived in the community, I quickly realized that I did not have the institutional support or capacity to engage in these activities. I also had a preconceived notion of the village as a relatively collective unit which met regularly to discuss issues. As it turned out my notions were both patronizingly romantic and more importantly wrong. The Cambodian village was spread out and fragmented. Many people had never been to a village meeting in years and there were no systems of village communication which would call villagers together. It was therefore difficult for me to arrange group meetings with villagers since it involved informing people directly door to door and people were often scattered throughout the geographical area. I re-evaluated my research methods and decided to concentrate on three principal methods of data collection. These methods were key informant interviews, semi-structured interviews and focus group discussions.

Key-Informant Interviews

A majority of the key-informant interviews took place in Phnom Penh with international NGOs, academics, researchers, government workers and members of the Cambodian National IPM Team. There was no specific period identified for these interviews as they were scheduled whenever it was mutually convenient throughout the period of my field research whenever I returned to Phnom Penh.

The objectives of the key informant interviews varied according to the individual participant, but they primarily gave me specific insight into the workings of the IPM program in Cambodia. These sessions were often very informal and most often conducted in English or French. The sessions offered me an opportunity to share my research plans or observations and receive feedback from others who had experience in rural development projects in Cambodia. Having these key informant interviews spaced throughout my research proved very beneficial. Interviews held before I entered the research site of Svay Teap helped to shatter some of my preconceptions about rural development in Cambodia and latter interviews often highlighted areas which I had not considered. It was also helpful for me to have someone to bounce ideas off and 'double check' or triangulate some of the information I had learned from the field. It was comforting, especially, for a novice researcher, that their experiences often mirrored my observations in the field. Ultimately, however, I was cognizant not to let broad generalizations take the place of locally generated site-specific knowledge.

Key-informant interviews were also carried out in Svay Teap. All village leaders were approached to provide background information on the village structure, local history, demographic figures and to describe how the IPM-FFS program was implemented in their jurisdiction and their experience with it. Again this was an opportunity for me to present my research plans to the village leader and gain their assistance to carry it out. All village leaders were very cooperative in answering my question and assisting me with my research, often providing me with a crude map drawing and directions and a list of

local villagers. Sometimes the leaders were "too helpful" to the point of becoming intrusive. For instance, one leader thought that he should assist me to make sure I talk to the people who will give me "good information". I had to explain, that while I was grateful for his offer, I thought the leader's presence may inhibit people to speak freely with me or that the people may perceive me to be a member of the Cambodian People's Party (CPP) to which the leader belonged. The local information I received from the village leaders was very insightful. It described the entry point of the IPM-FFS intervention and identified many of the local issues which I would use in my later interviews. The meeting with the village leader also gave me instant credibility in the village and lessened any suspicion or anxiety of my presence in the village.

Semi-Structured Interviews

Based on the key informant interviews I developed a set of issues and questions which would guide my interviews with local villagers. All questions were open ended allowing the participant to guide the interview to other areas instead of being constrained by a conventional yes/no approach. I tried to avoid leading questions which made implicit assumptions. For example, I would not ask "how can we improve the IPM program to make it useful", without first asking the participant for their own impressions of the IPM program. I approached each interview with freshness presenting myself as a student there to learn from them and their experiences and often concealing what I already knew for the purposes of triangulation. For example, I knew that there was an IPM-FFS program in each village but yet I would ask villagers if they had heard of any agricultural

training³² in the village. Some had never heard of the intervention in which case we carried on to other topics of where they received their information and knowledge about their own farm and farming methods. If they had knowledge of the agricultural training, I had them explain it to me as if it was my first time hearing about the program. I think the participants liked the open nature of the discussions which also empowered them to talk about other topics which I had not necessarily raised. I had conversations with farmers on topics of politics, the war, the number of weddings this year, the difficulties of being a widow, gossip, human rights, generational problems, etc. All of which gave me a better understanding and more reliable glimpse of the farmers' individual experiences in the area, and reflected in my own learning in an iterative research process.

Although the semi-structured interviews were to be individual interviews this was sometimes very difficult to achieve. I usually requested to speak to one participant at a household based on pre-selected criteria which included age, gender, and class as well as whether or not they had participated in the IPM-FFS intervention. Despite my best efforts, I would have access to my chosen candidate, but I would also sometimes be joined by that participant's family. I recognized that the presence of other family members could potentially skew some of the participant's responses, but I felt it would be rude and inappropriate for me to request a private audience. While I anticipated the greatest difficulties to be with dominant men answering for their wives, surprisingly, my

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³² The IPM-FFS program was often characterized by villagers as teaching them how to grow rice not a specific initiative to reduce pesticides.

experience was the exact opposite, with wives sometimes answering questions intended for their husbands.

In all, 122 interviews were conducted throughout the three villages, each session lasting anywhere from one to three hours. The timing of my research coincided with the late dry season and farmers were less busy at this time of year and were willing to participate in the study. Households were selected randomly on a map which evolved out of a community mapping activity. Special effort was made to visit households which were far from the roads and away from the centre of the village (where the wat was located). An attempt was made to reflect a broad section of the community in my study, but I did not develop a specific criteria by which to guarantee diversity. A rough guide to the breakdown of participation in the study is presented below:

Age³³ (122)	Young (6)	Middle (93)	Senior (23)
Class³⁴ (122)	Very Poor (43)	Poor (67)	Middle-Rich (12)
Participants (122)	IPM Participants (42)		Non-IPM Participants (80)
Gender (122)	Males (63)		Females (59)

Focus Group Interviews

Focus group interviews were meant to bring villagers together to share their perceptions of the IPM-FFS program and give them an opportunity to identify issues regarding the

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³³ Where Young = 0-16; Middle=17-50, Senior 50+. (Estimates applied when unknown).

³⁴ Rough estimates only and all wealth levels are relative. Classifications based on participant self-classification and researcher's observations. Assessment based on type of house, bamboo or metal roof, evidence of a water pump, number of buffalos/cows, and ownership of a cart.

IPM-FFS program. There were two key groups I wanted to involve in the discussions; those who had participated in the IPM-FFS program and those who had not. In addition I wanted to gauge the opinion of the more marginal groups in society and invited widows and the poorer members of the community to participate in a focus group. In all there were five focus groups held in the three villages over the time of the study. I would have liked to hold more focus group discussions, but they proved extremely difficult to organize and villagers rarely showed up. Indeed, of the five, only three had reasonable participation rates and the other two were cancelled. Both IPM-FFS participant focus group discussions had enough people to have a meaningful discussions but it was very difficult to facilitate. Socheat ended up managing the entire meeting and transformed it more into a group interview process. The idea of the focus group discussions was to empower the farmers in the research process and have them analyze their own situation. Instead, the discussions became more aimed at answering my questions. Nevertheless, I did gather some interesting data out of the experience and it gave me a very quick lesson in humility about the importance my research held for the villagers themselves.

The focus group with widowers and other marginalized people of the community was much more successful as it revealed many of the problems and issues faced by these people and gave them an opportunity to share some of their experiences both those related to the IPM-FFS intervention and otherwise. I was able to facilitate the discussion much better in this focus group and conversation flowed more freely. I think that in this focus group, people did become somewhat empowered and started looking at solutions to

solve their problems. Some new issues evolved out of the focus group discussions which were not raised in the individual interviews illustrating their potential value.

Participant Observation / Daily Life

A further qualitative methodology involved my own observations participating in daily village life and engaging in casual conversations with villagers. By observing the social interactions and interfaces of the villagers, I was able to gather first-hand impressions of their lives. Furthermore, I was able to cross-reference my observations with that which villagers were telling me in the interviews to detect contradictions or misinterpretations. Observations also helped me validate some of the information which I was gathering with other research methods. Spending time in these non-research capacities allowed me to build up greater trust among villagers and enabled me to get to know certain farmers better. An example of this occurred in my capacity as a guest at several weddings in the village. I learned a lot about the village social structure by being a guest at the wedding and other religious celebrations, observing who attended these celebrations and who did not. I was cognizant that I would be looking at situations of daily life through the lens of a western culture and ideology. Therefore, I avoided making any assumptions without first double-checking my impressions with locals. This did not mean that there were never conflicts between my own observations and villagers' comments. Sometimes my observations would highlight the differences between what I was being told and what I was experiencing and encouraged me to pursue these issues further.

Some Thoughts on the Process...

While there were clearly mistakes made in my methodology and failures in my approach I am satisfied that I was able to represent and interpret the voices of farmers in my study with an essential degree of accuracy and reliability. The research process taught me a lot about conducting primary research in a developing country; primary among them is that it is a lot more difficult than it seems.

Conducting research in a war-torn country offers its own difficulties. For instance, it was very difficult to broach the topic of national politics with the community as there are sometimes outbreaks of violent attacks against supporters of the different political parties in the rural areas. I also encountered some difficulty of getting some participants to trust me. Earlier on in the research process I would start an interview by asking the person their name for documenting purposes. I noticed that this seemed to make some people react nervously. I was later told that during the Pol Pot regime, if a senior official took down your name, it usually meant that you would be missing within the week. I changed my approach immediately.

Reflecting on my field research process, it becomes evident that my research methodology did not end up reflecting the true objectives of PRA methodologies as outlined at the beginning of this chapter. The villagers took part in *my* thesis research. I defined the questions and asked for their input. I left the interviews open-ended and allowed villagers to inform my research question but it was *my* project not theirs, which

was reflected most conspicuously through the low participation rates of some of the focus groups. In addition, the research project did not elicit any noticeable action from the participants other than the act of conscientization.

With PRA, appraisal and analysis are carried out by local farmers themselves with 'outsiders' learning by, with and from them. This was not achieved in my research, as it was myself who provided the analysis based on my interpretations of their comments, actions and responses. As such the research was not empowering for local participants and cannot be identified as a PRA methodology. I had used a participatory methodology, but there was only limited reversal of power between myself and the participants.

Ultimately, it was myself as a researcher who decided what information was relevant and it was I who had set the parameters of discussion in order to respond to my research question. In the end, my methodology probably fell somewhere between a PRA approach and a more extractive methodological approach where outsiders determine the agenda, obtain and take possession of information, to analyze it and write reports and papers in isolation from the supposed participants. With reference to traditional research approaches Chambers (1994a: 1256) notes,

Outsiders appropriate and come to own the information. They hunt, gather, amass, compile, and process and produce outputs. In PRA in contrast, these are largely reversed. Outsiders encourage and allow local people to dominate, to determine much of the agenda, to gather, express and analyze information, and to plan.

One regret I have with respect to the research process, was the fact that I was unable to

share the results of my analysis with the local participants themselves after my preliminary report. I had planned to return to the village from Phnom Penh after I wrote up a preliminary report on my initial findings, which was shared with the IPM National Team, Catholic Relief Services and other NGOs in Phnom Penh. On the weekend I had planned to return there was a bombing of a Vietnamese liberation statue in the Southern provinces and travel restrictions were imposed. After this I was unable to arrange a suitable time to return with Socheat and I eventually ran out of time. Consequently, I was unable to get any feedback from actual villagers and this remains as a weakness of the study.

Chapter VI

IPM-FFS Intervention in Svay Teap: A Case Study

6.1 Introduction

This chapter constitutes the analysis of the IPM-FFS Program as applied in the study area. It explores the local level responses to the IPM-FFS intervention in Svay Teap once the extension agents have left the field.

An important element in the analysis so far has been the growing recognition of the inseparability of sustainable agricultural development issues and resource-poor farmer participation and empowerment. Simply stated, resource-poor farmers must be empowered (putting the last first) if we are to improve sustainable agricultural and research and extension strategies. The challenge is therefore to promote the role of farmers as agents of change. This requires that farmers be equipped with adequate access to information, resources, skills, education and opportunities which will help them to help themselves. In this chapter, the IPM-FFS model in Svay Teap, Cambodia is placed under the microscope, as we seek to reveal the program's benefits and weaknesses. This chapter will attempt to build on the experiences of the research participants themselves to illustrate the local level responses to the IPM-FFS initiative. One of the primary tasks of this case study analysis is to determine if the IPM-FFS model in Svay Teap enables resource-poor farmers to take greater control of their agricultural development, through increased access to knowledge, resources and decision making power.

This chapter is divided into five sections. Section 6.2 situates the IPM-FFS intervention in the local context in Svay Teap, by providing a brief village profile of the communities. Section 6.3, scrutinizes the concept of 'community' within the study and explores the relationship which villagers have towards their 'community'. This will reveal an assumption made by project planners and illustrate one of the major obstacles to be overcome in the future. Section 6.4, describes how the villages were incorporated into the IPM-FFS implementation strategy. The nature of their incorporation into this initiative captures some of the issues outlined earlier in chapter four, and demonstrates the extent to which the project implementers were willing to 'hand over the stick' to the farmers. The succeeding section 6.5, lays out a post-intervention assessment of the IPM-FFS program. This section includes an account of perceptions of both IPM and non-IPM farmers in the villages vis-a-vis the extension project and attempts to trace the dissemination of information stemming from the IPM-FFS intervention into the community at large. In section 6.6, our attention is focused on institutional capacity building and the extent to which the program can be termed sustainable. This section will gauge whether the community has been adequately prepared to carry on the initiative by itself. The above sections will lay the groundwork for the conclusions and recommendations in the final chapter which follows.

6.2 Profile of Svay Teap District

The field work component of this research was conducted in the villages of Chrok Motes, Toul Ampil and Thlork. The three villages are situated some 150km south east of Phnom

Penh in the district of Svay Teap, Svay Rieng Province which borders Vietnam. Although exact statistics are difficult to access, the most recent population survey in the three villages indicates that 3452 people live in the three villages spread out more or less evenly among the three villages in 673 households.

The proximity of the Vietnamese border has influenced much of the area's contemporary history. This region was heavily bombed during the early 1970s by the US to counter the incursions of the North Vietnamese and resulted in massive disruption in the lives of the people in the region. During this time many families abandoned their homes to go to the larger centres in Svay Rieng Province which were thought to be safer. In 1975 Pol Pot took control of the area and evacuated the entire population to labour camps throughout Cambodia. Most of these people ended up in Pursat province or Battambang although some families had also fled across the border into Vietnam in the area known to Cambodians as "Kampuchea Krom" or lower Cambodia. In 1979, with the overthrow of the Khmer Rouge Regime, many former villagers started to migrate back to their 'native' villages and took up farming once again, although this time it was on collective farms under the leadership of the communist State of Cambodia Government. Collectivized farming was dissolved in the villages in the early 1990 when land was privatized and systematically divided among the villagers.

The history of violence and war has affected the social fabric of the villages in Svay Teap. Many men were either killed, injured or are still in the military which has skewed

the balance of genders in the villages. In Toul Ampil, 55 percent of the population is female and this has resulted in a number of female widowers and female headed households (20 percent) in the village. In some areas of Cambodia the number of amputees is also significant. However, in Svay Teap there was no significant number of amputees in the three villages of the study.³⁵

Virtually all of Svay Teap villagers are peasant rice farmers with men and women individually owning the means of production (land, draft animals, tools, etc.) and where the family is the primary unit of production and consumption. Farmers grow rice mostly for consumption rather than the market because they only have small landholdings averaging 1.5ha per household. The average rice yields in the area (of approximately 800-1000 kg/ha) is below the national average. There is only rain-fed irrigation available in the three villages and therefore villagers only grow one principal rice crop a year. This usually means a 2-3 month rice deficit in April, May and June when most of their food has to be purchased or supplied by international donors. Money for food purchases is generated by the sale of farm animals, and off farm activities such as transporting firewood. Currently, livestock and poultry raising are the main sources of income from which the villagers can derive capital. Backyard vegetable production can also provide additional income to the households. Credit is very difficult for most villagers to access. While villagers may borrow rice from neighbours they must be prepared to pay back at

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³⁵ Land mines are plentiful particularly along the Vietnamese border. Farmer's reported that they would sometimes lose buffaloes or cows to landmines but they knew where most of them were. Landmine victims would most probably go to the larger urban centres to seek non-agricultural work or charity.

least double what they borrowed. Similarly money lending charges vary from 10-20 percent interest per month.

Despite the relatively "equal footing" which villagers started out with, when land was first privatized and divided under the previous communist regime, there has been a rapid rise in economic disparity between families in the villages. A wealth ranking study carried out in Thlork in 1996 revealed that, based on villagers' own wealth criteria, 61 percent of the village was poor, 35 percent was classified as belonging to middle or average families while 4 percent of the population was classified as being rich. Perhaps more significant is that fact that this wealth differentiation is a phenomenon which has occurred only within the last seven years and shows no signs of declining. There have been at least three families in Svay Teap within the last two years which have fled the community in order to escape their debts. There are many families remaining who are becoming trapped within a perpetual cycle of poverty and may soon face the same fate.

The three communities of the study are predominantly ethnic Khmer and ascribe to Hinayana Buddhism. Each village is identified by its *wat* or pagoda which serves as the spiritual centre and is thought to contain the 'souls' of the individual villagers. Villagers sometimes participate in religious ceremonies and festivals but the costs of participating in these activities is often beyond the means of individual families. When I asked one farmer about his yield he joked to the delight of his neighbour beside him, "Sure, my rice yield was 1200kg/ha this year which was much better than last year...but last year we

didn't have so many ceremonies [weddings]... I'll be lucky if I have a few kilograms left for me and my family after all these ceremonies."

As noted above, food security is still a large problem in Svay Teap. While families manage to survive the "hungry months" due to their own resourcefulness or strategically timed Food For Work Projects, food security concerns loom large in their overall priorities. While I was unable to gather any health statistics for the village I saw evidence of malnutrition and disease in some families. Common diseases included; measles, cholera, dysentery, polio, skin disorders, internal worms, TB and typhoid.

Small primary schools are located near the wat in all three villages. Attendance is very high among children which bodes well for future literacy. Literacy rates in Svay Teap district are estimated to be 70-80 percent for males and 40-50 percent for females.

In terms of political structure, each village is headed by a village leader who is appointed by the commune leader who answers to a district leader under the supervision of the provincial governor. At present none of these positions is democratically elected. The 1993 UN supervised national elections resulted in a coalition government between the FUNCINPEC party, headed by the now exiled Prime Minister Prince Ranariddh, and the Cambodian People's Party (CPP), headed by Second Prime Minister Hun Sen. Following the election the two parties divided up the provinces between them and named governors to each province in Cambodia. Despite this arrangement of power sharing, the former

communist party (now the CPP) held on to all positions at the district and commune level. Therefore, there has been no democratic expression at the local levels and most of the leaders at the district, commune and especially village levels have remained in place since 1979. Accordingly, direct participation in community decision-making processes is weak. All of the leaders in the three villages were externally appointed in 1979. Their legitimacy in the community has noticeably eroded since the end of communal property.

6.3 Community Development: 'Where Every Household is an Island'.

There are few words in the international development vocabulary which generate such a good feeling in an observer as that of the word "community". It is often used as if it covered a homogenous, idyllic, unified population with which researchers and developers can interact unproblematically. However, a closer examination of the three villages under study reveals that often "communities" are neither homogenous nor unified. In today's Cambodia, communities exist as little more than geographic entities on road maps.

The social upheaval in Cambodia during the last two decades and changing political and economic landscape has seemed to hinder the development of a cohesive community identity. This is despite the fact that most of the farmers in Svay Teap were born in the area and have many family members in the region. In addition, all of the villagers have lived under a system of collectivization for more than fourteen years, during the Khmer Rouge and State of Cambodia Governments. Yet, the interactions with villagers suggest that the contemporary Khmer village lacks any 'real' community solidarity which can be

readily harnessed to support community development initiatives such as an IPM program.

The restoration of private property in the late 1980s has lessened all responsibilities which individuals have towards the village. Villagers no longer had to participate in the *krom samaki* and no longer felt the need to attend village meetings. Indeed, as soon as collectivization was abandoned, Cambodians returned to more individualistic practices. A 1996 report from SIDA makes the comment that in modern Cambodia "every household is an island" and my experiences in Svay Teap would seem to confirm this analysis with some exceptions. In an interview, one villager responded to my question about her responsibilities to the village and others in the village as follows:

I have no responsibilities for others... They look after themselves and I look after my own family. If someone needs rice maybe I will lend it to them if I have any [surplus] but they will have to pay back the rice with interest... the same as I would if I borrow rice.

Even kinship relations between blood relatives are not often very strong. Once a dependent marries and leaves their birth family, they become responsible for their own family's livelihood and welfare. This is significant in understanding the dissemination of knowledge. There were many cases in my field research where extended family member had participated in the IPM course but failed to distribute this information outside their immediate nuclear family. The idea of individual household self-reliance and self-responsibility was very prevalent in all my interviews with villagers wherein each individual household was responsible for its own survival.

The reluctance to participate in collective action projects or community organizations probably owes much of its existence to the population's experience during much of the last two decades of collectivization, especially during the rule of the Khmer Rouge regime and then the Vietnamese backed government. As previously noted, during the period of the People's Republic of Kampuchea, people were forced into collectivized farming and working groups. Village meetings were opportunities for people to inform the leaders on the counter-revolutionary activities of their neighbours, and for villagers to enforce discipline among community members using coercive methods. It was also during these meetings that villagers were divided into work groups and told which task they would be 'participating' in. It is little wonder why community meetings are still regarded with some degree of suspicion. In fact, many villagers had not attended village meetings for years and expressed relief of being freed from enforced collective action projects. As one women in Chrok Motes expressed:

I haven't been to a [village] meeting in ...maybe two years... I can't even remember. We don't have to go any longer like before [in the *krom samaki* system]... and besides nobody comes to invite me. Why should I go to a meeting, when all they do is make us work for free.

The concepts of "cooperation", "participation" and "helping one another" were appropriated by the Pol Pot regime extolling the virtues of collective action and solidarity. Unfortunately, these concepts were often enforced through coercion and still retain a negative connotation. This has some serious implications for development projects such as the IPM-FFS which encourages these same values. An interview with a long time community organizer in Kampong Chnam reveals that history holds some

important lessons for future developments in Cambodian villages.

The meaning of words are largely determined by previous experiences associated with their use. This is particularly pertinent in [community development experiences in] Cambodia where there has been a history of successive regimes who have used certain words to encourage the population to do what the rulers wanted often with disastrous results. Therefore, certain terms and concepts are problematic because of their use during the Khmer Rouge and Heng Samrin periods. It was important for us all to learn the parallels between our approach to developing communities and the approaches of the two previous regimes in terms of... participation, self-sufficiency, solidarity and working together.³⁶

Understandably, there is a lot of confusion and mistrust at the village level when NGOs drive into communities announcing plans which on the surface sounds analogous to the former experiments of the Pol Pot regime. In view of the historical and psychological baggage associated with collective organizations in Cambodia, it becomes easier to understand the resistance to community inspired activities on the part of villagers.

The lack of cohesive community units however, is not a new social phenomenon. Indeed, the idea of community solidarity and collective organization may not be a part of the Khmer social fabric tradition³⁷. As anthropologist May Ebihara wrote in 1968 while conducting a field study in Svay,

A striking feature of Khmer village life is the lack of indigenous, traditional, organized associations, clubs, factions, or other groups that are

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³⁶ Taped interview with Moira O'Leary, Krom Akphiwat Phum (January 20, 1997).

³⁷ Some of the reasons for the alleged individualism, and relative independence of Cambodian peasants may have been the combination of self sufficiency and relative abundance of land, making village organization superfluous. The implementation of private landholdings, sacredness of private property, and the introduction of the Napoleonic Code, are mentioned by several scholars as factors contributing to Khmer peasant individualism. What little sense of "village" community may once have existed was apparently broken down further during the Pol Pot period.

formed on non-kin principles. The only thing that approaches a formal organization in West Svay is the local militia composed of able-bodied men between the ages of 20 and 50, and this was initiated by the central government rather than by villagers by themselves (Ebihara cited in Frings, 1994: 63).

The view that village solidarity has never been strong in Cambodia is further supported by Thion (1993:98).

Village and family organization, especially if compared to that of China, Vietnam or India, was extremely weak. Khmer villages were not cohesive units as in Vietnam, dealing collectively with officials; and beyond the nuclear household, families easily disintegrated. Extended family did not exist, records of previous generations were not kept, ancestors were not the object of a religious cult. Corporate discipline over the individual by extended family or by village organization was weak, and once a person had fulfilled his obligation to the state - through tax or corvee - there was little constraint on his activities.

Despite such observations, many development planners continue to think unhesitatingly in terms of community-led development. Herein lies a significant problem for 'outsider' interventions which aim to attract the active participation of villagers. It is often assumed by project developers and planners alike that villagers eagerly await an opportunity to participate in the development process. However, in Svay Teap many villagers remain unconvinced of the merits of collective action. Non-IPM farmers in the study expressed very little disappointment with the fact that they had not been chosen to participate in the Farmer Field Schools. Primarily because they did not perceive any real benefits.

Despite the individualistic tendencies of the villagers, this does not suggest that they will refuse to participate in community inspired projects. It does suggest however, that

collective action within the village is difficult to organize without a clear and measurable benefit. For instance, many of the villagers participated in a canal rehabilitation project in 1996 through a Food For Work (FFW) project which promised rice in exchange for villagers' "participation" in the project. Despite the recognized benefit for the community there is little evidence to suggest that this project would have been undertaken without the promise of rice. The culture of aid and assistance in Cambodia has seemed to have corroded cooperative efforts and mutual aid projects. In the footsteps of market liberalization, the monetization of social relations is quickly becoming the norm where assistance even between neighbours and friends is becoming monetized³⁸.

These obstacles must be recognized and overcome if we are to ensure effective agricultural extension interventions which will benefit entire communities. As Christoplos and Nitch (1995:2) note, extension is essentially a combination of education and community organization. Greater efforts must be targeted towards this latter component in the IPM-FFS approach if it is to be improved. The IPM-FFS programs seems to assume a pre-existing village organizational structure. However, as has been demonstrated, in Svay Teap this preconceived idea of community as a natural cohesive unit is largely erroneous.

The community structure of Svay Teap has a profound significance for the National IPM

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³⁸ In a widow's household who required help with physical labour, I was told that "now they (manual labour) require money or rice to come and help us with ploughing or they will not help us because we cannot pay.

Program and information dissemination within the village. Due to the fact that there are no indigenous farmer groups in the village, the IPM team has to start from scratch, building its farmer schools and creating a "community" which can develop together. The capacity for information to be shared openly and freely depends largely on the extent of community development. The IPM program counts on the information and principles generated from its intervention to be shared and built upon - otherwise it will have failed to achieve its goals of sustainability and building sustainable community organizations.

Although an exclusively cost effectiveness approach to extension evaluations has been roundly criticized by many experts,³⁹ there must be some degree of financial accountability for agricultural extension projects in an era of declining donor funds. Furthermore, IPM training over four months is a relatively expensive intervention (approximately US\$1000/course) to train approximately 30 farmers. It is therefore manifest that these interventions be felt throughout the entire community and not just specifically targeted individuals. Consequently, a focus on community development must play a more significant role in future agricultural extension interventions which will emphasize community control and participation and lead to a wider acceptance of IPM principles in the villages. In an effort to understand areas where the IPM Program might be improved in terms of greater community participation, we now turn our attention to

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³⁹ Traditional cost effectiveness approaches for agricultural extension fails to encompass an understanding that environmental sustainability, poverty alleviation and empowerment objectives may require a different set of indicators and that there are unavoidable trade-offs between these and aggregate production objectives.

the manner in which the village was incorporated into the IPM-FFS program.

6.4 Incorporation of Village into IPM-FFS Implementation

As outlined in chapter four, development projects need to involve more participation by beneficiaries in their own improvement. Indeed many authors argue that without participation the people may benefit but not develop from a project (Gran, 1983; Fals-Borda and Rahmann, 1991). Chapter four illustrated that as the recognition of the value of public, popular beneficiary or community participation has increased, so too has the range of what is meant by participation. This paper has argued that participation and empowerment mechanisms must be involved at all levels of project intervention from identification, to design, to implementation, etc. The study of the IPM-FFS intervention in Svay Teap reveals that the villagers were not always 'active' participants in this project.

6.4.2 Project Identification / Design

The villages themselves had no input in the project identification phase of the intervention. While the national government through the Ministry of Agriculture, Fisheries and Forestry (MAFF) was involved in consultations in the identification of a need for an IPM program, its role seemed to be one of rubber stamping decisions of international aid organizations who perceived themselves to be *the* knowledgeable partners in agricultural issues of the South. The lack of commitment of the national government in this initiative can be demonstrated by its inability to pass relatively simple

legislation banning the most toxic pesticides in Cambodia⁴⁰. International organizations such as the United Nations' Food and Agriculture Organization (FAO) have long run roughshod over authorities in Cambodia in the area of agriculture development. The FAO has tended to formulate global agricultural strategies based on its experience in developing agriculture at the international level. However, the result is often that strategies conceived at the international level have been promoted without sufficient regard to the particular settings in which they are being introduced. The FAO's IPM program in Asia has received many tributes in the international community but this cannot substitute for actual results at the local level. As we are all aware the Third World is composed of numerous countries with diverse and complex local contexts which need to be addressed individually - unfortunately this is not always the case.

The emphasis on environmental conservation and the reduction of pesticides is often fuelled by international experts who base themselves in the developed North. Although, international agricultural experts recognize the importance of understanding the perspectives of the intended beneficiaries, they are outsiders who are neither rural nor poor and therefore base their conclusions on their own experiences. Hence, an IPM program becomes a priority where the local population is really more concerned with soil fertility or income generation projects, to name just two examples. It is clear that projects which achieve certain environmental benefits are supported by international

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⁴⁰ Legislation on the banning of certain pesticides in the Kingdom has been ready since 1994, but still has not been introduced to be voted on.

organizations and (perhaps more importantly international donors⁴¹) but ultimately development priorities must be developed by local people themselves. This was never attempted in Svay Teap.

Instead of attempting to consult local populations or community leaders, the National IPM Program enlisted the help of the various NGO offices in Phnom Penh, and encouraged them to participate in their already designed program. The priority of an IPM program in rural Cambodia was assumed *a priori*. The only thing which was required by the IPM Team was the recruitment of rural communities in which they could implement their program. The recruitment campaign was more of an administrative task achieved by contacting expatriate NGO project leaders and signing them up to host the program in areas where they were based. In the case of Svay Teap there was no needs assessment survey performed by the IPM National Team nor the local NGO to determine if the IPM intervention was merited or justified in the proposed communities.

The interviews conducted in Svay Teap reflected that while the villagers were "happy to have foreigners (aid workers) in their community...", there were other areas which they deemed to be more of a priority than reducing pesticide use, such as increased access to credit so that they could buy fertilizer. Indeed, this topic was brought up several times by the farmers during the field research study in the village.

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⁴¹ The World Bank is expected to rapidly expand the IPM program in 1998. (Personal Communication with FAO Program Director).

A background document for the IPM project compiled by the IPM National Team suggested that the program could result in significant savings for farmers by reducing their pesticide use. The National IPM program claimed that farmers could save on average US\$38 / per hectare. However, throughout the study in Svay Teap no farmer was encountered who spent anything approaching this figure on pesticides. Indeed, the highest amount that any farmer spent on pesticides was 8000 riels/ha or approximately US\$3. The figure used by the IPM National Team based on its national survey was almost 13 times higher than the actual situation in the village and reinforces the importance of site specific information for diverse agricultural settings.

In terms of actual project design, this too was done in isolation from the local villagers. The proposed IPM intervention was "sold"⁴² to participating villages through their connections to NGOs as a complete package. The IPM National Team would supply trainers to the villages and the program would last 14 weeks, covering certain set subjects. Although the non-formal educational approach was to make the intervention more flexible and responsive to local concerns, in reality the project deviated very little from its set design. This is illustrated by the fact that all three villages in the study covered exactly the same subjects week for week. This suggests that the individual participants themselves seemed to have little bearing on the direction or content of the training sessions despite the claims to the contrary in the IPM-FFS literature.

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⁴² International NGOs subcontracted the National IPM Team to implement the intervention in areas where they had on-going programs in the field.

The lack of participation in project design was due to three principal reasons. First, and most significantly, the design stage of the program was not open to local villager participation in the pre-implementation stage for their input. The only pre-implementation consultations which took place were in Phnom Penh between the foreign NGOs and the IPM National Team. Second, despite the proposed flexibility and responsiveness of the program, IPM instructors had insufficient training in non-formal education and participatory methodologies to react to farmers' concerns or ad hoc changes to the training as it unfolded. Instructors generally preferred a more formalized and systematic approach to the training sessions where they could lead and control the training sessions. This aspect is evidenced by the formalistic field monitoring of the instructors which showed suspiciously unvarying trends in insects among the three villages. While this does not discount the value of the instruction or non-formal methods, it demonstrates that the agenda was clearly set by the instructors themselves which may have precluded some of the concerns of local farmers. A final reason for the lack of change in project design during implementation is the fact that participant farmers themselves felt insufficiently empowered to suggest alternatives to the set curriculum. Farmers for the most part remained as passive learners demonstrating public deference and respect to the IPM instructor.

There is a long tradition of social hierarchy in Khmer society and the importance of keeping one's place in it. As Martin (1994:11) observes the primary social rule in Khmer society is "be discreet, unobtrusive, and keep to your station". It was evident through

interviews with farmers and general observations that participating farmers felt uncomfortable making alternative suggestions or putting their own concerns forward to alter the design of the training during the 14 weeks. The view of one farmer was reflected through most of the interviews. "The teacher was educated in Phnom Penh and must therefore be respected... He knows many things and so we listened to him. Sometimes I didn't fully understand him but I did not interrupt".

If the IPM program is to become a more participatory and inclusive activity it must endeavor to enable and encourage greater farmer involvement at the identification and design stage of the intervention.

6.4.3. Participant Selection and Composition

The IPM-Farmer Field Schools involved more than ninety farmers from the three villages within Svay Teap. Each village had its own FFS which could accommodate approximately thirty farmers who would meet one morning per week over a period of four months, or one growing season. The question for project planners was how to select these farmers who would participate in the IPM training. The IPM National Team designed the selection criteria and had the host NGO choose IPM-FFS participants in collaboration with the village leader. The criteria included the following: farmers should be actively farming rice; should be willing to learn, apply what is learned and share what is learned with their neighbours; they should be numerate and literate; and be a member of good standing in the community (CRS, 1996a) . With this rather vague set of criteria

the local NGO approached village leaders and selected farmer participants.

The most unfortunate aspect of this selection process was the fact that it once again short-circuited community participation. Except for the negotiation and consultation with the local village leader, whose own legitimacy is questionable, the local farmers were left out of the process. When the selection process was discussed with the villagers they most often responded with bewilderment. They had no idea why certain people were selected and why others were not. Even farmers who were selected for the IPM-FFS did not know why they were chosen. In Chrok Mote, the village leader resurrected the framework of the now defunct *krom samaki* system and invited most of the former krom leaders to partake in the IPM training. This signals a weakness in the participant selection process. Although the host NGO appropriately sought the participation of the village leader, it failed to consider that by using existing patterns of local power and organization it may actually reinforce existing inequities within the community rather than stimulate desired change. The people selected by the village leader tended to belong to the village elite and more educated community members and were often related to the village chief. This does not necessarily address the priorities and needs of the poorest of the poor who are so often marginalized by development initiatives.

CRS did exercise certain influence in the selection process by encouraging the recruitment of women, which was ultimately reflected in their 30 percent participation rate in the IPM training in Svay Teap (CRS, 1996b). However, there was no overt effort

made to include participants from all economic groups in the village. Indeed, the selection process privileged certain members in the community through their connection to the village leader or the NGO.

Equally significant was the criteria of literacy to participate in the training. This tended to neglect a good proportion of the village who could not read, particularly women and poorer families. There have been many advances in participatory training methodologies in the last few years using non-literate visualization techniques instead of relying on written documents.⁴³ These methods could have been applied to lessen the emphasis on literacy within the intervention and thus further empowering the voices of poorer less-educated farmers to participate in the learning process. Furthermore, by encouraging participant farmers to take notes in their supplied notebooks, the intervention was formalized in a traditional pedagogical approach where the instructor supplies answers and the pupils write down the responses. On more than several occasions during the interviews, IPM farmers went to consult their notebooks for the 'proper' responses to my questions, illustrating their dependence upon what they had been told rather than what they had learned through their own experience. This suggests that the IPM trained farmers had failed to fully absorb the lessons from experiences during the IPM-FFS intervention, and had not become "IPM experts" as the project had intended.

The selection process did involve the village leader but as we have seen the village leader

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⁴³ See Pretty and Chambers, 1993 ; Cornwall et al., 1993 ; Chambers et al., 1989.

holds little legitimacy in the village other than his role as a conduit for outside interventions. In order to further empower the community to participate in the intervention the selection process should have been more democratically controlled so the villagers could decide amongst themselves who should be chosen to participate in the IPM training. The IPM National Team or the local NGO could lay down certain criteria for participation if they desired (ie. 50 percent female and include people from all economic backgrounds, young, old, widows, etc.) but the villagers themselves would choose who would participate on their behalf at the IPM training. This type of selection process would ensure a more broadly based participation of the community and perhaps more importantly, help make the IPM participants more accountable to the villagers after the program is finished so that they would be held responsible by the community members to transfer what they had learned to others in the community. Currently, most non-IPM farmers interviewed felt that those who received training had no obligation to share their learned information outside their own families.

The move towards democratizing development would be dramatically assisted by the move to further democratize the structure of government at the village level. This would make the leaders more representative of the villagers, forcing them to have some degree of accountability for their decisions. This would help to empower both villagers and the leaders themselves to 'pull down' services from the central government. Commune elections which were slated for last year would have helped the move towards greater democratization, but these elections were cancelled and, for the moment, there seems to

be little will on the part of the national government to decentralize control or strengthen village democracy. As one farmer joked "We now have freedom, liberty and democracy at the national level but nothing has changed at the local levels". Involving the entire community in project decision-making right from the start would seem like a move in the right direction towards a more empowered community and building on farmer solidarity and community development. Making the IPM-FFS selection process more open and participatory is just one step towards addressing the objective of farmer empowerment.

6.4.4 Handing Over the Stick to Whom?: Privileging Elites and the Status Quo

Examining how the villages were incorporated into the IPM-FFS implementation, it becomes evident that the IPM intervention missed an opportunity to ensure greater community participation right from the start of its intervention. Furthermore, the manner in which participants were selected seemed to privilege the role of village elites and assumes a homogeneity among farmers in the villages which may have silenced the voices of the most resource-poor farmers in the community.

Based on observations in Svay Teap, IPM project planners failed to "hand over the stick" to the community throughout the pre-implementation phase of the project. While the intervention itself claims to be both "empowering and participatory" within the actual training, the project planners displayed little confidence in the ability of the community to either identify agricultural research priorities or design a worthwhile project plan. While the lead NGO in the community did consult with the village leader on participant

selection, this process was not opened up to the larger community and consequently left them in the dark as to what was going on and why certain people were selected over others. It was evident in at least two of the three communities, the selection process resulted in the privileging of individuals from a higher socio-economic status within the community and therefore put their priorities ahead of other more resource-poor farmers.

As has already been indicated, the use of pesticides was not very prevalent in Svay Teap. In fact, the poorest farmers could not even afford to use pesticides and practiced alternative methods of pest control. Invariably, these farmers were not selected or could not afford to participate in the IPM-FFS program. The poorer farmers who were interviewed often supplemented their farming by travelling to the nearby forests to harvest timber products and hunt wild animals or engage in unsustainable fishing practices.⁴⁴ This highlights an important consideration. In terms of meeting the goals of sustainable agricultural development, the IPM intervention may be failing to address the needs of creating sustainable livelihoods for Cambodia's resource-poor farmers despite its environmentally friendly objectives. It was clear that the poorest farmers within the villages were neither empowered nor consulted on their agricultural research priorities.

The exclusion of poorer farmers, particularly widows in the IPM-FFS training was not a premeditated decision by project planners but the selection process and the suggested

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⁴⁴ Unlike the traditional cage fishing which is done by capturing fish in a hand-held cage, electric shock fishing sends an electric current through the water, instantly killing both mature and immature fish (and frogs).

selection criteria from the National IPM Program made it difficult to include these individuals. Not only did the criteria include literacy and numeracy but it also sought to train those who held status within the community. As Scott (1985) notes of farmers in his village study in Malaysia, the poorest in the community are quite often the farmers with the least social respect and vice-versa. It should therefore not be surprising to learn that poorer villagers were overlooked when looking for farmers who were well liked by community members for the IPM-FFS training. With this criteria, what are the chances for the selection of poorer farmers who are consistently borrowing rice and making excuses why they cannot pay back their loans on time? The selection process is stacked against the poor right from the start.

During interviews with poor widows,⁴⁵ they mentioned several reasons why they might have not been chosen to participate in the IPM-FFS training. It was apparent that their lack of whatever little surplus in terms of rice or cash put a severe limit to their participation in collective action projects, but other less material factors - the shame of being poor, the relative ritual impurity associated with the position as a widow or abandoned wife, were also important in limiting their active participation in village affairs. These women were often made socially invisible and were omitted from official village documentation as if they were shameful secrets. Even other women avoided contact with these widows.

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⁴⁵ The term widow is applied locally to include also single or unmarried women with children and women who are abandoned or divorced, the so called 'part-time widows' (*memei pdei leng*).

If we take into consideration that households of poor widows constituted a significant proportion of the villages (20 percent) and harboured a large number of children, the implications for excluding them from agricultural extension interventions are important. Most of these women, moreover, were returnees and had been given poor land that yielded little. Their houses were usually located on the periphery of the village, where they lived more or less as social outcasts, with the shame of poverty and without proper means of basic subsistence or adequate social conditions, and with not even a minimum of participation in public life and decision-making.

It is exactly the above type of person that should have been included in the IPM-FFS in seeking to put the last first. Yet no mechanism was put in place by project planners which would have facilitated their involvement in the training. Perhaps those responsible for the selection process were putting their trust in the idea that the information from the course would eventually trickle-down to everyone in the community including these less fortunate farmers, but as we examine later, this assumption is highly problematic.

6.5 A Post-Intervention Assessment of IPM-FFS in Svay Teap

The IPM-FFS intervention in the three communities lasted for fourteen weeks, with an IPM trainer meeting with the FFS once a week. While it would be too premature to present a comprehensive catalog of results given the nature of the intervention, the study presents some useful insight which consider the effects that the IPM-FFS has had on the community once the extension agents have left the field.

6.5.2 IPM-FFS Students in Svay Teap

The reaction of the IPM students to the course was usually very positive when questioned. Although they sometimes found it difficult to isolate exactly what new things they had learned in the course, they expressed that the course helped them clarify, or better understand certain phenomenon which they already knew. For example they may know the stages of the rice plant but not necessarily understand the physiology of the plant itself. Particularly useful was the "how and why" certain things happened in rice agriculture. Another area which some IPM-FFS participants mentioned was the understanding that not all insects are pests. As one younger participant commented, "before the IPM training course we didn't know that there are many natural enemies in the rice field and we could not identify which ones are the pests and which ones are the natural enemies. We always thought that all insects in the rice field are pests".

The majority of the IPM farmers enjoyed learning in the field, and not in the classroom. They appreciated the non-formal approach to education and had fun with the group dynamic activities. Several participants noted that the instructors made them discover things by themselves. As one participant in Thlork noted, "the instructors made us find out the answers by ourselves and made us realize that we [farmers] know a lot about rice paddy farming even if we didn't learn it from a book". During the course, the trainees experienced many improvements of their own performance especially in their field observations which became more accurate, and in their ability to identify insects.⁴⁶

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⁴⁶ Several field visits with IPM students and a CRS agronomist confirmed this ability.

Although most of the participants found the course to be beneficial, they found it difficult to express what those benefits were exactly. A few IPM students, while enjoying the course, felt the only tangible benefit they received was an IPM T-shirt and 1500 riel/week⁴⁷ which they complained was not enough given the time they had spent at the course away from their own farms⁴⁸. The difficulty in finding real tangible results is to be expected in the IPM approach since it does not aspire to transfer a technology per se but rather principles which include; growing a healthy crop; observing fields weekly; conserving natural enemies; and farmers becoming IPM experts. Nonetheless, a majority of IPM students interviewed had a satisfactory to good understanding of the IPM approach and found the information they learned to be useful.

In terms of overall farmer empowerment, there is less evidence of this feature resulting from the IPM-FFS intervention. Although there was certainly a consciousness raising aspect involved with the learning process which helped raise farmers' self-esteem and confidence, it is less apparent that this personal empowerment will be channelled into future activities (planned experimentation, political agency, etc.) where farmers will feel responsible for their own development.

Through the interviews with IPM participants it became evident that they were students,

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⁴⁷ 1500 riel is worth approximately \$CDN 0.60.

⁴⁸ The IPM National Program paid farmers to 'participate' in the IPM-FFS schools to compensate for their loss of one morning a week in their own fields. While the amount is low it does undermine the spirit of 'participatory' development and sets a precedent for future development projects in the village.

not experts in the learning process, accepting many things that the "teacher" told them verbatim. For instance in one village when the instructor was approached by a student with a particular insect problem in her rice field, the instructor told her the only thing that she could do was to spray and that there was no other control method. While the instructor may have been correct, it impugns the discovery process of non-formal education and limits discussion and learning. Other indicators include the fact that some of the training included some "dos and don'ts" of pest management without any applied background. For example, some of the posters created at the IPM-FFS in all three villages included messages about synchronous planting and post-harvest plowing as important elements of IPM. However, none of these cultural control methods were actually performed or tested by farmers themselves during the IPM-FFS.

Despite the empowerment objectives of the IPM program, none of the IPM students interviewed felt confident enough to carry out future crop experimentation on their own. I believe that this was due to the trainers' limited capacity to design experiments with farmers during the course and their failure to transfer ownership of the program to the farmers. The experiments were designed by the instructors and the farmers 'participated' in *their* experiments. Clearly, there is room to improve the participatory research components of the program to help empower farmers to engage in their own experimentation. Field experiments on the test plots were uniform across the three sites in terms of aim, design and treatments leading to the conclusion that farmers had little or no input in these experiments. Equally significant was the fact that IPM team members

referred to the field trials as "demonstrating recommended practices". Yet, the IPM-FFS approach is supposed to encourage farmers to engage in self-experimentation in order to discover local, site specific and more relevant agricultural practices than generic recommendations.

If farmers are to become "IPM experts", the IPM experts must also learn to become students and accept that they too can absorb many lesson from these experiments in complex and diverse farming environments. At present it is not apparent that there is much information from the field being fed back into the formal research process from the field schools. This includes some of the crop protection strategies being used by resource-poor farmers of the district. A stronger link between the IPM National Program and IRRI-Cambodia may help to correct this deficiency but IPM instructors themselves must be open to learning new things from farmers and their experiments and accept them as partners in learning. Instead, the instructor-pupil relationship which developed in Svay Teap, enforced the conventional extension approach of instructors possessing knowledge and farmers trying to access it.⁴⁹ Often it seems that the instructors were merely there to lay down an experiment to demonstrate a pre-determined result to farmers. Some of the IPM participants themselves recognized this, "I think they [instructors] knew which

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⁴⁹ One source told me of an IPM-FFS experiment in Kandal Province, on nutrition management and fertilizer timings which was expected to show that split applications of fertilizer (basal and panicle initiations) would make more efficient use of nitrogen and produce higher yields. However, in several cases, the treatment that approximated typical farmer practice (most Nitrogen applied two weeks after transplanting) came out on top. IPM team members were unwilling to credit these results and thereby risked undermining their avowed goal of supporting farmer experimentation

methods were best but wanted to let us [farmers] see for ourselves." While these hands-on experiments did allow farmers to learn about IPM first hand, the results were never in question, power was never shifted to the farmers to engage in their own experiments which is a major objective of the farmer field schools.

In terms of change in actual farming behaviour among IPM-FFS participants, there have been no dramatic changes recorded. However, about half of the IPM farmers indicated that they would be more cautious before spraying their fields next season because it can damage their rice crop, which is not exactly accurate. The lack of dramatic change probably owes much to the fact that farmers' current practices do not involve prophylactic or calendar based spraying as they have elsewhere in Asia. This is due to the fact that the civil war and violence during the 1970s precluded many of the Green Revolution technologies from entering Cambodia. Farmers in Svay Teap currently only spray when they perceive a pest problem in the rice field. IPM-FFS participants should now be able to diagnose these problems more accurately based on their experience and training,⁵⁰ but will farmers who were not selected be able to do the same?.

6.5.3. IPM-FFS and Farmer-to-Farmer Transfer

As mentioned earlier, one of the main thrusts of the IPM-FFS program is to disseminate

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⁵⁰ While IPM farmers may be more adept at identifying pests and predators my observation indicates that their perception of rice plant damage may still be inaccurate particularly when it comes to rice defoliation. Although certain insects can cause early defoliation of rice plants, scientific studies suggest that it has a very minor effect on rice yield during the first 40-60 days: (Interview with Dr. K.L. Heong, November 15, 1997).

new information and skills throughout the community. Initial evidence in Svay Teap seems to point to an overall weakness in the area of IPM information diffusion. An overwhelming majority of non-IPM farmers interviewed indicated that they had not received any information from the participants in the FFS. Equally significant was the fact that virtually no one asked the participants to tell them what they had learned either.

In Svay Teap, farmer-to-farmer transfer of agricultural "knowledge" seems to occur in the visual domain. Farmers will not directly ask others about their farming methods or techniques but they will observe how and what neighbouring farmers are doing and learn from that. Numerous examples were recounted of neighbouring farmers walking on to another farmer's field and observing the progress of different plants without a word being exchanged. The benefits of IPM are not usually that visually dramatic or evident. (ie. money saved from not buying pesticides or in the reduction in the decline of wildlife such as birds and frogs). The use of IPM in rice fields does not usually produce a noticeable increase in yields (FAO, 1996:3).

Due to the less evident visual aspects of IPM, it must be spread in a more deliberate manner. It was evident that a majority of the farmers in the study who had not attended the IPM training, had a very poor understanding of pest and predators and had learned little if anything from those who had attended the course. However, it was also apparent that non-IPM students did not feel that the IPM students were learning anything of real value. It was obvious that non-IPM students were watching the progress of their

neighbours with some interest but did not detect any noticeable benefits. "My neighbour went to the school every week where they taught him to grow rice... but it didn't improve his rice yield. I had the same amount of rice and I never went to the [FFS]." In some cases IPM students even had yields well below the village average⁵¹ which did not augur well for those promoting IPM methods as being beneficial.

As discussed earlier the Khmer village is highly fragmented and this makes the communication of any information through a trickle-down approach very difficult, especially since this information does not necessarily result in dramatic and visually apparent benefits. Another concern for the trickle-down approach is that social interactions within Svay Teap rarely take place between households of different socio-economic backgrounds as witnessed in several marriage ceremonies during my stay in the village.⁵² A wedding is a very big event in the life of the village with religious ceremonies, loud music blaring through rented speakers and plenty of food. I was told that everyone in the village is invited to weddings as well as relatives in different villages. However, many poorer farmers were conspicuous by their absence at these ceremonies. In follow-up interviews and informal discussions I asked farmers about this observation and other occasions where they might interact with their neighbours.

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⁵¹ An IPM student in Thlork had her field destroyed by pests and only managed to salvage 12kg/ha compared to the average yield of 600kg/ha.

⁵² March is a tradition time of year for wedding ceremonies. I was fortunate to attend two such ceremonies.

Wealthier farmers insisted that there was no discrimination based on socioeconomic status and that they related well with all of their neighbours. A wealthier farmer from Chrok Motes expressed "We are all poor... there is no preferential status given to certain villagers. We are all the same". Not surprisingly, the poorer individuals in the village had a different perception. One such farmer was initially hesitant to speak about the wealthier farmers, but eventually he described his relations with these farmers saying, "It is normal... they [wealthier farmers] treat us badly. They hold onto their rice seeds and refuse to trade with us and when we have to borrow rice..they tell us that we are lazy... I work very hard! ...I am ashamed to borrow rice". When asked if he ever gets together with the wealthier farmers to trade farming information, he laughs and replies, "No, they [wealthier farmers] don't like to talk to us unless they need someone to help them in their own fields. If they ask us, we must go, because if we refuse maybe they will never lend rice to us again. Mostly people stick together with people from their same status."

The poor dissemination of knowledge and information between different socio-economic groups within the village reflected in the above section underlines the importance of having participants from various backgrounds participate in the IPM-FFS intervention. It also demonstrates the need to devise a mechanism within the intervention to more actively and purposely spread information to the entire community. One area which should be examined is the possibility of having IPM-FFS farmers presenting what they

had learned to the entire community after the rice harvest is complete.⁵³ Other, more inclusive strategies, may be to devise ways which will make the IPM-FFS participants more accountable to the non-IPM farmers to help break down some of the barriers between different groups within the village.

6.5.4. Social Myth of Sameness

Throughout the interviews and focus groups, farmers seemed reluctant to cite examples of a "good" farmer in their village. Asked if some farmers were better farmers than others in the village, or used different methods, the majority of respondents reported that all farmers use the same techniques/methods and that there was little differentiation in skill level. The interviewees were probed on this point and although some conceded that there may be some difference with respect to vegetable production, in rice farming everyone had the same skills and everyone grew rice the same way.⁵⁴

Frequently, I received the feedback that a "good" farmer was a rich farmer, not because of any special skills or knowledge which they had used, but simply because they had more money to purchase chemical fertilizers. The farmers had thus created a simple cause-effect equation. The more fertilizer that one uses the greater the rice yield. There seemed to be a real reluctance to make any distinction between the skills of farmers in

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⁵³ Due to the fact that the IPM-FFS course finishes at the same time as the harvest begins, both IPM and Non-IPM farmers are too busy to attend village meetings to discuss the findings of the IPM-FFS course.

⁵⁴ The inability to identify "good" farmers in Cambodia contrasts other studies in the Philippines and Indonesia: (see for example Rola, 1996).

the village or even consider that farmers themselves might be able to try alternative methods (other than increasing external inputs) that would improve their crop production. Most seemed resigned to cite the same equation above.

Despite their inability to cite any different skills and techniques between farmers in the village, the interviews uncovered a lot of different methods used by farmers particularly with respect to timings of fertilizer applications and alternative pest control methods.⁵⁵ It was evident that even within villages these methods were not necessarily shared by all. There is therefore a social myth of sameness built up around villager's farming techniques when in fact a high degree of differentiation in techniques and alternative methods are employed by different farmers throughout the villages. When an alternative technique came to light (ie. using a repellent mixture of oil, tobacco and shampoo on rice plants), interviewees were asked if the all villagers knew about this technique and the response was inevitably positive. However, in follow-up interviews with other farmers in the village, it was apparent that this was rarely the case. These methods were not applied universally in the community.

The inability of farmers to cite different methods or alternative methods used by farmers

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⁵⁵ Non-chemical pest control measures included: adjusting water levels in the rice field, running nets (mosquito netting) through the fields to reduce the number of insects, using a repellent mixture of oil, tobacco and shampoo, burning tires and using smoke to repel insects, catching the bad smelling thrip insects, (crushing them and mixing them with water) and spraying them on the rice fields. Some farmers also noted that the timing of their planting also played a significant role in lessening pest outbreaks. All of these above methods were being used by individuals within the three villages before the IPM program was introduced. However, not everyone knew these methods.

in their same village suggests that there is very little comparison between farms other than witnessing the amount of fertilizer that another farmer applies to the fields. Part of this reason may be due to the fact that farmers have various plots of land scattered throughout the village rather than one large tract of land which would be easier to observe. Some farmers openly compare yield but they may purposely under-report their yield to avoid being swamped by requests from villagers and relatives who need to borrow rice in the dry season. As one farmer on the outskirts of Thlork reported, "some people hide their rice so they won't be asked to lend their rice to their less fortunate relatives and neighbours in the hungry months"⁵⁶. This further obscures the public results of various farmer agricultural experimentation and therefore limits the creation of local knowledge and dissemination of agricultural information within the community.

The IPM-FFS intervention encourages a knowledge intensive approach to agriculture. However, farmers within the community seem unable to recognize their own capacity to improve their crops themselves outside of purchasing more external inputs. This attitude pervades the village even after the IPM training course. This aspect of farmers' attitudes is particularly disturbing for the future of sustainable agricultural improvements as it illustrates how powerless farmers feel in improving their own situations without depending on costly external inputs.

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⁵⁶ If villagers borrow rice they must pay back the lender double the amount of what they borrowed. Since many households are already in a cycle of perpetual poverty, they will be unlikely to pay back this amount. Consequently, the lender will be left to carry this burden. For most villagers, it is therefore best not to lend rice.

While the IPM-FFS project in Svay Teap attempted to reverse this attitude and empower farmers, it may have inadvertently contributed to this above attitude among farmers through poor design of an IPM demonstration plot in each village.

6.5.5. IPM Demonstration Plot: Mixing Fact with Fantasy

An IPM test plot was set up in each village and was conceived as a way to broaden participation in the village by setting up experiments and making the results public for all to see and compare. The demonstration site consisted of five 10 X 10m test plots on which different fertilizers and pest control methods were used. The test plots were centrally located and familiar to most farmers, although some farmers never visited the plot site. Most of the farmers interviewed did go to see the test plot, most often by themselves with no guidance or explanation offered by students attending the course. The test plots had signs to explain the different methods used but once again not everyone in the village was able to read. A majority of respondents, including IPM students, could not recall the make-up or exact results of the test plots which tested the efficiency of fertilizer use and compared an IPM plot to a plot treated with pesticides (See Table 6.1).

Table 6.1 IPM Demonstration Plots in Svay Teap (all three villages).

Test Plot 1	Test Plot 2	Test Plot 3	Test Plot 4	Test Plot 5
Control	Fertilizer and Cow Manure	Fertilizer Only	Fertilizer w/ IPM techniques	Fertilizer w/ pesticides

The use of demonstration plots made a dramatic visual impression in the village and most villagers had the opportunity to visit the site and weigh the progress of the different

methods themselves. However, final results of the test were not widely disseminated in the village and even some IPM students recalled or recorded only partial information.⁵⁷

The farmers who did visit the test plots acknowledged that some of the test plots had better results than their farms but the reason they most often cited for this was that the IPM instructors were using more fertilizer than they were. When farmers (both IPM and non-IPM students) were asked if they could use any of the information learned from the test plot to improve their own crop, there was usually a negative response or sometimes just laughter. One farmer's response encapsulates the generally held sentiment.

If I had enough money to buy as much fertilizer as they [IPM instructors] did I could have the same results... but I don't need instruction to tell me that - I need credit so I too can buy the fertilizers. I already know about using fertilizer but I cannot afford as much as they can.

In focus group discussions it was generally agreed that among the five test plots the one using manure achieved the highest yields which prompted me to ask if farmers could increase their use of manure in their farming to improve crop yields. Inevitably, the same response came back, summed up one farmer in Toul Ampil.

Don't talk to me about cow and buffalo manure like the others - because I simply don't have enough of it... I already use cow manure, but I only have enough for the nursery... I know that manure is the best [fertilizer], but it's impossible to suggest that farmers here can find enough manure around to replace chemical fertilizer.. It would take about 100 carts! [to replicate the demonstration plot] - where would I find that amount of cow manure! I only have one buffalo and two cows and that's more than some others in the village.

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⁵⁷ Several indicated that they only received the results from the manure plot.

According to project documents, the test plot was meant to "show farmers what they were capable of producing under the right conditions" (CRS, 1996a). However, it seems these "right conditions" will remain illusive to most farmers. In the most productive plot (test plot #2) the IPM team had used the equivalent of (3.6 tonnes of manure + 66 kilograms of DAP fertilizer + 99 kilograms of Urea) per hectare. For most farmers this signalled the test plot's entrance into the realm of science fiction and fantasy since these amounts of inputs were well beyond the reach of their comprehension and impossible for them to replicate. Rather than being an empowering activity for farmers this demonstration seemed to have an opposite effect and the farmers never saw their own situations reflected in the test plots.⁵⁸

Discussions on the demonstration plots highlighted the divide between IPM teachers and farmers. The use of qualifiers such as 'us' and 'them' were very pronounced. It was clear that farmers did not feel that they themselves were the experimenters. Farmers were not consulted in the design nor the direction of the tests. The participatory component of the experimental plots, if it can even be termed as such, consisted of the farmers *participating* in a pre-designed project that did not belong to them nor did it seem relevant to their own situations.

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⁵⁸ As Nietzsche argues history (narratives of human experience) can be used well, or abused. Used well, they can confer continuity, strength, hope, inspiration, insight, and courage. Abused, they can confer despair, inertia, stagnation, and cynicism. In this case the later situation seems to dominate. Nietzsche, F. The Uses and Abuses of History.

A further consequence of the demonstration plots being perceived by farmers as an "outsider" initiative was the reality that farmers readily dismissed the significance of the results. Farmers (both IPM and non-IPM), were quick to note that in addition to using copious amounts of fertilizers, the test plots also benefitted from the free labour from the 30+ IPM students who cared for the rice field by weeding and catching insects for identification (thereby reducing the amount of insects argued the farmers). Furthermore, the results of the IPM field tests themselves were measured by the IPM instructors *not* the participants which threatened the credibility of the results (these results are presented below).

Fig. 6.1. IPM Demonstration Plot Results

(Source: CRS, 1996b: 3)

Farmers were not stakeholders in the experiments and therefore had no loyalty to the project. Farmers seemed to perceive the results of the demonstration plots more as a threat rather than an opportunity to learn. Consequently, most farmers were dismissive of the results. They further noted that the tests were conducted on small plots requiring less labour whereas their farms were larger and they had neither the access to labour nor time.

The attitude of farmers vis-a-vis the IPM test plots demonstrates the importance of designing tests and trials with the active participation of farmers. If the farmers had been more involved in all stages of the intervention they would have felt a deeper sense of ownership and held a bigger stake in the results. Farmers as the primary stakeholders in this initiative, should have been encouraged to exercise influence and control over the project. Instead, they were involved in the project simply as passive recipients, informants and labourers.

6.6. IPM-FFS and Capacity Building: Implementing Sustainability?

One of the most important considerations of a sustainable agricultural intervention such as the IPM-FFS is that learning continue after the 'outsiders' have left the field. Indeed, a major objective of the IPM-FFS National Program is that the FFS continue at the village level after the IPM team has left the community. Unfortunately, the IPM team has not succeeded in setting up IPM clubs, farmer groups or any other locally based agricultural organization in any of the three villages in Svay Teap.

Most of the IPM students interviewed considered the project finished and had no intention of meeting with other IPM students to continue their learning, experimentation or information exchange. Furthermore, the project seems to have inadvertently monetized farmer participation. By offering IPM participants approximately 1500 riel per week to compensate them for their lost time on their own fields, project planners had introduced the concept of farmers being paid for their participation. This is a difficult dilemma for project planners in the Cambodian context where food security is still not assured and a farmer's neglect of their own fields may result in reduced yields. However, it is questionable whether this type of financial compensation does any good, particularly in light of the capacity building objectives of the IPM-FFS initiative. Will farmers continue to participate in collective projects such as experimental plots without similar compensation of that provided by the National IPM Team? If it serves as any indication, only one village leader (Chrok Motes) expressed a desire to use a test plot in the community again even if the IPM Team did not return to his village. Other village leaders were waiting to hear any information from the IPM team to learn if they had any intentions on returning to the villages to continue the farmer field schools next season.

While the National IPM Team would like to see the development of IPM clubs and other farmer organizations sprouting from the IPM-FFS experience, it has failed to equip the communities with adequate resources to help start up these initiatives.⁵⁹ The community

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⁵⁹ No permanent test plot site within the villages was designated or allocated after the IPM team had left.

leader does not have the resources to compensate farmers monetarily or through other incentives (the provision of snacks, beverages, T-shirts and caps) as did the National IPM Team. Interviews with village leaders have shown that villagers are already reluctant to participate in public work campaigns,⁶⁰ it is doubtful that villagers will be more willing to devote their time and labour to future test plots which do not supply the same type of incentives offered by the IPM National Team.

Since the IPM team has left the three villages in Svay Teap there has been no contact with the villages nor any support offered to help the communities set up their own farmer field schools. According to a member of the National IPM Program, the local NGO is supposed to continue their relationship in the community and fill in any gaps once the IPM team has left the field. If this is the case no one had informed the local NGO. In fact the rapport between the FAO sponsored IPM National Team and the local NGO was not particularly healthy. Staff with the local NGO and village leaders often expressed disappointment with the lack of communication and information sharing between the IPM team and themselves. In terms of future IPM interventions, there were no definite plans if they would continue, where demonstration plots would be located (if at all) or if there will be any external resources to fund the test plots in these communities on a continuing basis.

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⁶⁰ All three village leaders complained that villagers have already become accustomed to getting rice as compensation for their work with the Food for Work projects and IPM program and this makes it difficult to mobilize people to help in public projects. "How much do you pay me?" is the reply from villagers when leaders try to organize a public project.

Participatory projects such as the IPM-FFS require follow-up and support if they are to sustain themselves. A February 1996 document from the National IPM Program seems to recognize this need, but has not translated this need into action in Svay Teap. The report states that the IPM team has responded to the enthusiasm created with IPM by "conducting monthly farmer meetings where current issues and problems are discussed and relevant information and solutions are shared between farmers" (Cambodia IPM Program, 1996). Despite its good intentions, this has not yet occurred in any of the three villages of the study. While it remains a possibility that the IPM National Team will eventually set-up these monthly meetings, one wonders why no information has been passed on to the village leaders or IPM student participants who have been left in the dark with respect to future decisions affecting their villages. By excluding local villagers from decision-making on future programming, it further dis-empowers the community, reinforcing their dependency on the IPM National Program to improve their situations.

Expecting the communities to drive the IPM management and training process after only one season is problematic. The IPM National Team must ensure farmers' sustained support with both resources and political support to empower resource-poor farmers. The road towards farmer empowerment is a long one and cannot be achieved with a single intervention over one agricultural season. Embracing a participatory development approach is a step in the right direction but will count for very little unless it is combined with resources which are required to sustain the project and enable active participation by resource-poor farmers over the long term.

Chapter VII Conclusion

7.1 Introduction

This thesis has examined whether the IPM-FFS extension model has succeeded in empowering farmers to promote sustainable agricultural practices in Svay Teap, Cambodia. In other words has the IPM-FFS program resulted in a situation where resource-poor farmers of the community were able to participate meaningfully in a process which allowed them to shape and exert greater control over the development agenda through increased access to knowledge, resources and decision-making power and apply agricultural practices which were sustainable. This chapter contemplates the research findings of the case study in response to the above research questions.

7.2 Research Findings

Project Relevance

There are many levels to the IPM-FFS program in Svay Teap, but the first question which needs to be addressed has to do with project rationale - was the IPM-FFS project even warranted? Surveys undertaken by the IPM National Team have indicated that pesticide use in some areas of the country are very elevated, accounting for as much as US\$95 of farmers' costs per season. However, the average amount being spent on pesticide products by residents of Svay Teap is closer to US\$2 per season. The amount spent on pesticides is significant because the prime motivation for farmers to use IPM techniques

is based on the possible savings which they can realize from eliminating pesticides.

While health and environmental costs are also considered by farmers they seem to weigh less significantly on influencing the behaviour of farmers already living on the margin.

The National IPM Team's survey results show aggregate figures of pesticide use. They used these figures to justify their intervention in Svay Teap without performing a locally based needs assessment. Similarly, CRS, the host NGO in the district approved and funded the IPM intervention based on these aggregate results. CRS was excited about the "participatory approach" to sustainable agricultural extension promoted by the National IPM Program. It did not seem to occur to them however, that this participatory approach should extend to project priority identification by the villagers themselves. In essence the implementing agencies had performed an aggregate diagnostic and applied it to a specific area without any consultations with the local population. While it would be ridiculous to fathom doctors prescribing medicine to their patients based on national statistics without first conducting a check-up, this is exactly what has occurred in this instance, with the international community assuming the role of doctors. To carry on the metaphor, if the doctor told us what is, and what is not good for us based on a privileged access to knowledge - would we not be justified in regarding the diagnosis with some suspicion? Does the doctor always know best? These questions must be answered by the international community as it seeks to understand why beneficiaries are failing to respond to their interventions.

Perhaps the program in Svay Teap is meant as a preventative initiative whereby, the IPM program will help stem future increases in toxic pesticide use? While this may be the case, the lack of consultation with villagers and a "we know best" approach undertaken by the project implementers, slightly resembles the former colonial attitudes illustrated earlier in chapter two, and may serve to alienate community involvement.

This study concludes that the reduction of pesticides in Svay Teap was not necessarily a priority for local farmers. Many farmers were too poor to purchase pesticide inputs. Those who could afford external inputs opted to purchase fertilizer to increase soil fertility. While the villagers did not object to the externally induced IPM project, this should not be interpreted as active support.

Project Incorporation

Once the project had been designed at the national level, project planners introduced the intervention to the 'community' through the village leaders and downloaded the responsibilities to the local NGO and the village leader to select participants. While this demonstrated the willingness of planners to 'hand over the stick' it failed to put power in the hands of local farmers. Instead it opted to support existing power structures within the community which favoured the position of the village leader, his family and the more elite members of the community. Moreover, it served to uphold existing inequalities within the village rather than stimulate change.

The authority of the village leader stemmed neither from democratic legitimacy nor traditional claims to power. It would have therefore been an option for project planners to introduce a more democratic process for participant selection as is currently being done in other project sites in Cambodia.

Imaginary "Community"

There was an assumption on the part of the IPM National Team, of what was meant by 'community' which tended to encompass a universalistic and homogenous view of farmers living in Svay Teap. Unproblematic social interactions between villagers were assumed, which would manifest in information from the IPM-FFS trickling down to non-participating farmers in a methodical manner. As we discovered, however, much of the information remained as isolated, individual 'shipwrecks' in a community where 'every household was an island' and farmer-to-farmer transfer of knowledge was complex. Despite the well meaning efforts of project planners to encourage IPM-FFS participants to share their experiences and information, this was rarely carried out, and little information was actually passed on to non-IPM participants in the community. The project therefore had little success in empowering the community at large through this intervention.

Efforts to encourage villager 'cooperation' and 'participation' in the project failed to realize that in the context of Cambodia's recent history these terms often meant different things. 'Participation' meant the provision of free labour to carry out someone else's

project and was regarded with some suspicion especially when promoted by outsiders. The fact that IPM participants were also paid, made these claims seem rather hollow. As illustrated in chapter four, this type of participation most closely resembles contributive participation where local farmers contribute their time and partake in the IPM-FFS intervention in return for some small monetary remuneration. This fee was meant to offset farmers' opportunity costs for attending the course but it seems evident that this further alienated the larger community by monetizing member's participation. Furthermore, it has also set an unfortunate precedent for future projects which hope to enlist 'truer' forms of community participation.

The IPM-FFS Learning Process

The pedagogical approach of the IPM-FFS program was embraced by most IPM farmers. They appreciated the way the course was conducted and liked the 'hands-on' aspect to the course. The fact that the IPM-FFS lasted throughout the rice growing season allowed farmers to trace the various developmental stages of the rice plant and made it easier for farmers to bring up real-life situations which they encountered in their own fields. The non-formal education approach worked well using locally determined names for insects and using a discovery-based learning system. It was obvious that some IPM farmers' confidence in their abilities did increase after the course and it improved their ability to diagnose pest problems more accurately thereby increasing confidence and self-esteem among IPM farmers.

Farmers as Equal Partners?

The FFS pedagogical model by itself was uniquely empowering for farmers as its methods created space for farmers to create knowledge by themselves. This was described by participants as a liberating process as it allowed them to engage in a *dialogue* with agricultural extensionists - a novel approach for most of them. The pedagogical approach therefore, differed from traditional uni-linear models of agricultural extension where extension messages flow from the top-down in a hierarchical manner. At the very least, the FFS challenged the traditional totalitarian and ethnocentric models of extension and helped to establish an exchange of views between 'outsiders' and 'insiders'. However, the evidence from the case study demonstrates that more must be done to reverse the 'normal professionalism' of the IPM instructors and encourage greater participation among resource-poor farmers in this *dialogue* enabling them to place their priorities and concerns on the development agenda.

This requires that power be transferred to these farmers to allow them to take control of the IPM intervention. As illustrated in the case study, strict guidelines were placed on the extent and depth of community participation in the IPM-FFS initiative and project planners were unwilling or unprepared to hand over control to local farmers. As such, the project exploited farmer's, using their participation as a means to achieve pre-determined objectives designed at the international and national levels. If the IPM-FFS project is to empower farmers, project planners must conceptualize farmers' participation as an end, and invite farmers to be full participants and full partners in designing, implementing and

monitoring the initiative.

Had farmers been a more integral part of the project design, the test plot may have more closely resembled their reality. Instead, the demonstration plot had a disempowering effect on local farmers, reinforcing fatalistic attitudes and implicitly confirming their powerlessness to improve rice crops without access to increased inputs. The effect of the test plots did little except to reaffirm the widely held view among local farmers that a "good" farmer is a rich farmer, or one that is able to purchase increased agricultural inputs for their farm. It therefore upheld the existing view among resource-poor farmers that they were powerless to change their situations.

Sustainability

The case study demonstrated that IPM participant farmers learned new skills in identifying pests and predators and improved their ability to diagnose field conditions. A small majority of IPM-FFS participants also suggested that they would use less pesticides next season now that they had learned about the potential damage. It is important to remember however, that in order for an IPM program to 'succeed', it requires mass mobilization of local farmers. The application of IPM principles in one field will have little effect if a majority of surrounding fields continue to spray pesticides. Pest outbreaks are not only contained on the fields which have been sprayed with pesticides, but will easily spread to neighbouring rice paddies. The IPM program depends on mass mobilization of the community to implement IPM principles, but the study suggests that

little information is being shared with non-participating farmer households (approximately 90 percent of villagers). Therefore, greater emphasis must be focused on disseminating agricultural information and knowledge in a more deliberate manner, to all farmers. The more farmers who practice IPM principles on their fields, the lesser chance of secondary pest outbreaks and the greater reduction of deleterious environmental and health effects due to pesticide-use.

Particularly, the IPM-FFS program must make greater efforts to make its programming more accessible to the more marginal members of society within the community. A greater emphasis on 'putting the last - first' both in terms of their priorities and participation in knowledge creation, will help to ensure sustainable livelihoods for the poor and discourage them from engaging in other non-sustainable activities such as shock-fishing and forestry exploitation which is currently evident.

Capacity Building: Sustainable Institutions.

An important concern for many agricultural extension programs is 'what happens once the outside agents have left the field'? While programmers may have liked to see the community itself sustain the IPM-FFS program and continue with other types of farmer experimentation, this does not look hopeful in Svay Teap. At the time of the field study, community leaders were not aware if the IPM National Team would return to the community and most farmers considered the intervention to be over. In terms of the farmers' own abilities they were ill-prepared to carry on their own experiments within an

IPM-FFS environment and had insufficient resources (such as land for the test plot) to continue the initiative by themselves. Furthermore, the resource-poor farmers in the community had developed very little responsibility or ownership for the project in the first place. Thus, it is unlikely that they will assume responsibility for the continuation of the program.

Participating IPM farmers were not sufficiently empowered nor adequately resourced to assume control over the IPM program in the community. Furthermore, the monetization of farmer 'participation' within the original program plan has made it more difficult to encourage future participatory community projects without promising to pay farmers for their labour, time, etc. As such the project cannot be deemed to be sustainable. It was both unreasonable and unrealistic for project planners to expect that this program could continue at the village level, once the National IPM team left the community.

Reflections of the IPM-FFS Program in Svay Teap

While many of my conclusions are very critical of the IPM-FFS strategy in Svay Teap, it is important to recognize the enormous difficulties involved in attempting to implement such a novel agricultural extension approach in the context of modern-day Cambodia.

The IPM-FFS program is still relatively new in Cambodia (since 1993), and faces enormous challenges not confronted in other regions, among these; civil war, insecurity, lack of human resource capital, food insecurity, lack of regulations and law, fragmented authority, poor communication networks and centralized decision-making. Despite these

constraints (and others) the IPM-FFS program must be improved in its implementation.

The pedagogical approach of the IPM-FFS holds a lot of promise to empower farmers in their own learning. The non-formal self-discovery learning process is a radically different approach from conventional agricultural extension programs wherein farmers are coerced, lectured at, and told what to do. There is no question that IPM farmers enjoyed the training process and gained important confidence and self-esteem as a result of the intervention. However, while farmers were given voice within the field "classroom", it was clear that outsiders were driving the overall process and were unwilling to 'hand over the stick' to the participants. Outsiders controlled everything from project identification, to project design, to project implementation. Farmers were invited to participate within fairly strict parameters (ie. classroom discussions) and power was rarely transferred from the outsiders to the local farmers. While the IPM-FFS program professes to recognize and value the experiences of resource-poor farmers in rural development initiatives, and acknowledges the importance of having farmers actively participate in their own development, the depths of these assertions seem rather shallow. In the end, the IPM-FFS program in Svay Teap was unsuccessful in empowering local farmers (particularly the most vulnerable resource-poor farmers) largely because it viewed participation as a means to an end, rather than an end in and of itself.

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