IPM Technology Transfer and Adoption

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IPM Technology Transfer and Adoption

- Goal: To maximize adoption of IPM technologies for the resources expended.
- Factors
  - Capabilities of institutions involved in tech transfer
  - Farmers: resources, education and socio-economic situations
  - Appropriate transfer methods for various IPM technologies
  - Technology availability, awareness, and suitability

Maximizing IPM adoption

- Integration of many factors requires a multi-faceted approach
- Which institutional mechanisms can be strengthened to increase diffusion of IPM knowledge?
- What is the optimal combination of approaches for spreading IPM technologies?

Technology Transfer Methods/Approaches

- Radio or TV programs, videos
- Dramas
- Campaigns to spread simple messages
- Demonstration plots
- Field days
- Fact sheets, booklets, leaflets, posters
- IPM curriculum in K-12 school programs
- Mobile IPM teaching laboratories
- Farmer Field Schools (FFS)

A combination of approaches is likely to be most effective and efficient

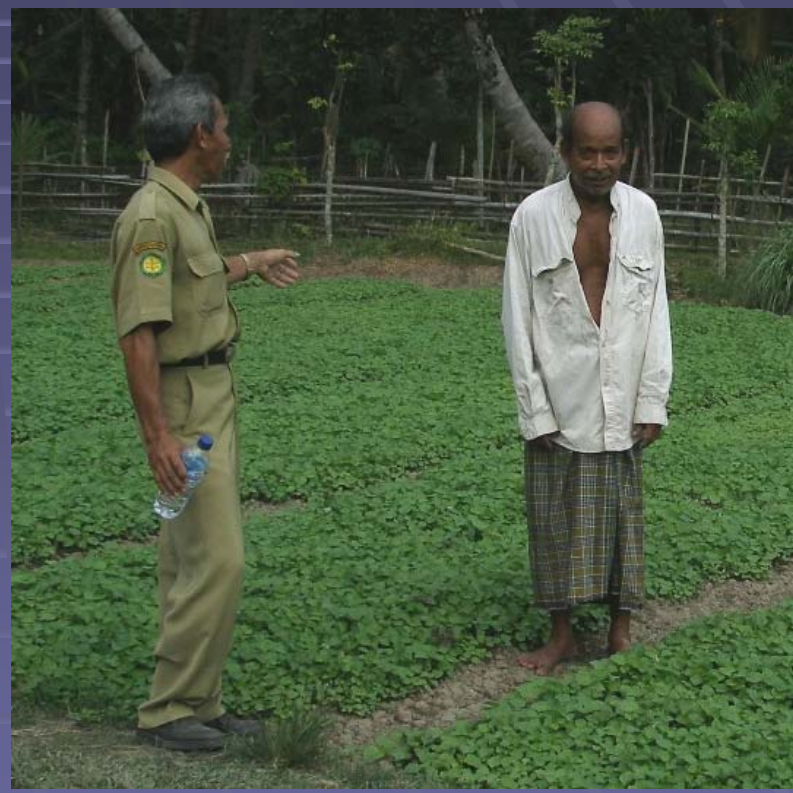
- Some IPM technologies can be transmitted in simple messages (e.g. in media broadcasts)
- Others need more in-depth forums (e.g. Farmer Field Schools)
- Need to consider the farmer's literacy, gender issues, and other socio-economic factors

Multiple institutions

- Raise chance of success by utilizing multiple institutions to transfer technologies, due to strengths and weaknesses of each

Institutional strengths and weaknesses

- Publicly-funded extension programs:
  - Strengths:
    - reaching small farms and resource-poor farmers
    - extending socially and environmentally beneficial information
  - Weaknesses:
    - reduced budgets
    - agents lack resources and are over-extended



Institutional strengths and weaknesses

- Private sector:
  - Strengths:
    - where it is profitable, IPM will be strongly promoted
    - use of scarce public resources is minimized
    - marketplace demands are brought back to growers
  - Weaknesses:
    - may neglect resource-poor farmers
    - may not promote IPM technologies that do not involve profitable products (e.g., chemicals, seeds)

Institutional strengths and weaknesses

- Non-governmental organizations (NGOs):
  - Strengths:
    - reaching resource-poor farmers
    - promoting IPM technologies that are environmentally friendly and management intensive
    - strong community-level contacts
  - Weaknesses:
    - often lack in-depth technical knowledge
    - projects usually targeted to small areas and of short duration

Multiple institutions

- Optimal to have multiple institutions due to:
  - Above strengths and weaknesses
  - Relative presence of each type of institution differs by country

Assessing Adoption

- In the Philippines, IPM CRSP assessed factors influencing willingness to adopt onion IPM technologies
- IPM technologies considered:
  - Rice hull burning to manage nematodes
  - Trap cropping with castor
  - Bt and NPV to control armyworms

Cuyno 1999

IPM CRSP / Philippines study

- 176 farmers surveyed
- Factors significantly affecting adoption:
  - Information variables, such as source of pest management advice and participation in IPM training
  - Previous use of protective measures against pesticide exposure
  - Several other factors to a lesser degree

Cuyno 1999

Assessing Adoption

- In Uganda, IPM CRSP analyzed adoption of 8 IPM technologies on cowpea, groundnut and sorghum
- 5 technologies had <25% adoption
- 3 technologies had >75% adoption

Bonabona-Wabbi 2002

IPM CRSP / Uganda study

- Higher adoption of most IPM practices associated with:
  - Farmers' participation in on-farm trial demonstrations
  - Accessing agricultural knowledge through researchers
  - Prior participation in pest management training

Bonabona-Wabbi 2002

Assessing Adoption

- In Ecuador, IPM CRSP studied adoption of potato IPM practices
- 109 potato farmers surveyed
- Main determinants of adoption:
  - Access to information through FFS
  - Field days
  - Pamphlets
  - Exposure to FFS participants

Mauceri, Alwang, Norton and Barrera (in review)

IPM CRSP / Ecuador study

- Cost-effectiveness of methods:
  - Field days and pamphlets strongly impact adoption, taking into account their low cost
- Technology transfer from FFS farmers to non-FFS farmers is occurring

Mauceri, Alwang, Norton and Barrera (in review)

Campaigns to spread simple messages

- In Vietnam, pesticide use on rice was reduced by more than 50% in large areas where the message: “No spray for the first 40 days on rice” was widely broadcast.

Heong *et al*. 1998

Impacts of Farmer Field Schools

- A synthesis of 25 impact evaluations of FFS showed:
  - “Substantial and consistent reductions in pesticide use attributable to the effect of training”.
  - Increases in yield in many cases.
  - Many developmental impacts, among them that FFS motivated continued learning.

van den Berg 2004

Impacts of Farmer Field Schools

- Four large nationwide studies on rice in Bangladesh, Vietnam and Indonesia showed 35-92% reductions in pesticide use

Larsen *et al*. 2002

Pincus 1999

SEARCA 1999

FAO 1993

Impacts of Farmer Field Schools

- Two independent studies on rice in Sri Lanka demonstrated that farmers who had participated in FFS more than 5 years earlier were using only one-third the amount of pesticides as control farmers

Tripp, Wijeratne and Piyadasa 2005

van den Berg, Senerath and Amerasinghe 2002

Impacts of Farmer Field Schools

- A study on vegetables in Vietnam documented a 53% reduction in pesticide use and 18% increase in yields due to FFS (ADDA 2002)
- In Bangladesh, FFS participants had an 80% reduction in pesticide use and 25% increase in yield for eggplant (Larsen *et al*. 2002)

Impacts of Farmer Field Schools

- An atypical result:
  - On rice in Indonesia, FFS farmers showed an 81% increase in pesticide expenditures and 11% reduction in yield, over an 8-year period
- However, control farmers showed a 169% increase in pesticide expenditures and 15% reduction in yield

Feder, Murgai and Quizon 2004

Conclusions

- A mix of technology transfer methods and strategies, tailored to the specific situation, is likely to be most effective
- Participatory appraisals enable the process of designing the tech transfer strategies to best fit each local situation