APCPA IPM / ICM

TRAIN-THE-TRAINER WORKSHOP

Held in Chiang Mai, Thailand.
30-31st May 2000.

REPORT OF PROCEEDINGS OF IPM TRAINER WORKSHOP

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MOTIVATION

This workshop was held for the purpose of training key agrochemical industry personnel to in turn train the staff in their respective companies and countries in the principles and importance of Integrated Pest Management and Integrated Crop Management. Increased emphasis and education concerning IPM/ICM is critical to the continued success of agriculture in the region and hence the commercial success of the agrochemical industry itself.

The course outlined basic IPM and ICM principles along with a possible format for presenting them in training courses. Material was provided to delegates in the form of a teaching resource manual including; OHT sheets, written text, and a video presentation on the subject. This material was then used as a demonstration and discussed with respect to its application in the relevant settings. It involved the delegates in examining their own desired outcomes and definitions of IPM as well as their past experiences of Integrated Pest Management in the Asia-Pacific region.

Issues concerning IPM/ICM in the rice industry were explored by Dr Paul Teng and others as a case study. At the conclusion of the meeting a set of discussions generated lists of the various activities and directions concerning IPM/ICM that might be pursued by industry in the future.

PROGRAMME

Tuesday Programme

- Introductions
- History of the programme
- Motivation for the programme
- Proposed IPM training course, structure and content
- Participants' IPM definitions
- Introductory background and definition for IPM
- IPM – a total approach to pest management
- Video on IPM and discussion
- Presentations by participants
- Field trip
- Presentations by participants
- Identifying the essential elements of IPM – group discussions

Wednesday Programme

- Video analysis with educational highlights
- Discussion of presentations in general
- Presentations by participants
- Elements of IPM – final discussion and group reports
- Own definition of IPM
- Re-visit structure of course, materials, choices in presentation etc.
- Rice Production case study.

TUESDAY PROGRAMME

Discussion – Thoughts on introduction.

Brainstorm on plant pests – what is a pest

- Insects, vertebrates, pathogens, (not diseases) weeds. Pest definition often confused with insect only definition.
- Look at interaction of other organisms with the host plants.
- Damage to users of plants
- Control vs. Management in definition
- Pest groups have different characteristics, ie movement patterns, habitats etc.

What is IPM? Additional participant comments:

- Some industries have unrealistic aims e.g. Urban pest management, problems with setting threshold at 0% tolerance. Same difficulty in Nurseries.
- Poor definitions. IPM = no chemicals (Cambodia), or last resort (Philippines). In contrast, crop production is the priority in the USA, and minimal usage is emphasised in Malaysia.
- IPM is flexible in definition when it comes to packages of information or implementation.
- Government and media opinions rule the PR game at present.

G.M.O. Debate

Perceived Problems	**Responses**
Human safety	Better PR
Genetic pollution	Educate:
Environmental pollution	- Perspective on food needs
Mistaken definitions of IPM	- What do other industries do
Ignorance of real issues	- G.M.O.s are only part of the system
Negative news sells	- Shift the argument, IPM = principles to use, specific technology will change

- Most of all, we should not let the G.M. debate to crowd out the overall consideration of IPM.

IPM Video discussion:

As an aside concerning the video, "producer" in Australian usage, means "Farmer" – ie. agricultural producer, vegetable producer etc…

- IPM Rice Indonesia's use of the spiderweb as an icon/symbol, should we choose one in general for APCPA in our region for IPM?

IPM as a threat to the volume of agrochemical sales

- Paying customers survive and pay their bills
- Farmers pay for expertise, and agrochemical industry can provide it
- New markets open up for "soft" chemistry
- Are "soft" chemicals too expensive?
- Extend life of current chemistry
- Can provide market advantages ie. Products with better characteristics (residues, quality etc.)

Participant Presentations. Session I

1. **Name:** Dr. Tawachi Sitchawat

Topic: Common issues in IPM

Outline:

- Government must work together with industry, rather than in different directions (ie thinking of IPM as organic farming). Farmers and public can become confused.
- Monitoring must be convenient.
- Safety must be integrated with the IPM practices, especially suitable safe clothing in hot climates.
- Equipment has to be standardized in terms of application, or variations in gear made known. Perhaps recommended branding?
- Price fluctuations of commodities leads to problems in setting Economic Thresholds (ETL).
- How to sell IPM concepts to industry where it may alter the volumes of product sold.

Questions:

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2. **Name:** Mr M. Kusnawiria (Novartis Insonesia)

Topic: Indonesia, Legal commitments, knowledge of users, acceptance of IPM.

Outline:

- Novartis's commitment
- Government law
- Basic principles (healthy crop, sustain beneficials, weekly scouting, training)
- Know pests
- Know beneficials
- Scout crops

- Spray when necessary
- Avoid resistance

Onion and Chilli example
- Farm profit maintained through reduction of pesticide, however this leads to tension in retail market for agrochemicals.
- Not all farmers use IPM, but the information is now available.

Questions:

Q. What about the profit of the companies?

A. *Farmers become loyal to the company providing the expertise, and the chemical's efficiency is maintained, resistance is minimized.*

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3. Name: Mr. Yap Tect Hean (Bayer Malaysia)

Topic: IPM for the intelligent Management of Leaf Eating Caterpillars in Oil Palm.

Outline:
- During hot period (March, April, May), outbreaks occur.
- Stress on natural predators, severe defoliation follows via pests.
- Pest profile, VIP (very important pests).
  - *Metisa plana, Pteroma pendula, Setora nitens, Darna diducta*
  - Single defoliation of 50% - 30% yield loss over 2 yr period.
  - $420 USD / Hectare
  - Predisposing factors – ecology out of equilibrium, return via management
- Use all techniques to benefit beneficials, and reduce pests.
  - Habitat management, nectar bearing plants *(Anitgon leptopus, Euphorbia heterophylla)*
  - Stink bug (Pentatomidae) and assassin bugs (2 sp.)
  - Monitoring, recommended actions
  - ID, Life stage, Application timing, Pre/post treatment populations
  - Intervention, trunk injection of systemic.
- All this requires close relationships with industry.

Questions:

Farm visit

Mixed farm of Longan, Guava, Rice, Poultry, Pigs.

Comments

- Sustainable, but not very profitable.
- Production of own food defrays the low income, reducing need for cash.
- Still requires the input of food for poultry
- Used "E.M" (Effective Microorganisms), a cocktail of dubious benefit, yet preferred because the farmer perceives it as a reduced risk compared to registered agrochemicals.
- N.B. the implications for effective communication networks able to reach farmers in a credible manner.

Participant Presentations. Session II

4. **Name:** Mr H.S. Weerasekera (Harrisons Chemicals, Sri Lanka)

Topic: Why limit the use of crop protection products.

Outline:

- Decisions to reduce conventional agrochemistry seen as a major reason to go into IPM in Sri Lanka.
- Farmers often try to avoid chemistry usage, left as a last resort.
- In rice there is IPM, but there is little education so often insect identification is incorrect, control is inadequate.
- Large problem with agrochemicals used in suicides
- In vegetables government and industry advise the farmers. A poster was produced to identify safe products and correct application.
- Confidence in vegetable growing may be restored
- IPM training by Dept Ag. And "Farmer schools".
- Adoption problems with scouting. Industry is then blamed for pest resistance.
- Claim is that IPM has reduced spraying and increased yield, but there are questions about the accuracy of estimations.

Questions:

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5. **Name:** Mr Paul Grassick (FMC Asia-Pacific)

Topic: Where have we got to in all the time we have been talking about IPM?

Outline:

- It will be a long time for information to be broadly accepted.
- There is information and education. IPM is a "bottom up"approach, the

farmer has the responsibility and needs information and education.

- IPM may confuse growers, it is I.C.M?
- Outlook of subsistence farmers is different.
- Pests, products, and people. If we don't manage products they may be removed from the market.
- Resistance and unsafe practices, information must be disseminated.
- Industry is going to have to implement? Governments have a heavy hand, more likely to succeed if there is farmer freedom to choose techniques.

Questions:

- The role of consultants is unlikely under industry labels, due to focus on short-term return and a need to increase staff and expertise.

A. *It won't be easy, companies are concerned with bottom lines and share value, but it has to start somewhere and the current situation is unsustainable.*

- Farmer school is popular in India, but the information in them is not necessarily correct.

A. *Prohibiting items does not prevent their use. The consequences will be visible if we fail, and we may then learn.*

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6. **Name:** Mr Young-Kee Park (Aventis Korea)

Topic: Korean IPM systems

Outline:

- Demand for IPM is still low
  - The fundamentals are still not established
  - Misconceptions – organic farming and non-chemical farming
  - Most farms are small, complex and intense with high inputs.
  - Public demand for safe food
- Circumstance is changing
  - Govt. initiative to reduce chemical use 50% by 2004
  - NGO crop residue inspection
  - Environmental concern is spreading
- Activities
  - Most IPM/ICM is by government
  - Education of rice farmers
  - Research on other crops varies by provinces, most still remain at research level and are not practically implemented

Questions:

- NGO issues public pressure. *"The Clamor for Clean Food"*

- Many of the home countries have governments that are demanding decreases in pesticide use. Pressure also comes from manufacturers and retailers, as they plan to make market share from the community concern.
- Testing for residues is getting cheaper and so ICM is required, as excessive residues will be detectable.
- What is industry perspective on Government reductions of 50%?

A. There has been discussion, and no conflict as yet.
Suggestion that regulation or restricted access might bring a balanced answer. I.e., licensed users or specific conditions of application.

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7. **Name:** Muhammad Jamil (Novartis Pakistan)

Topic: In Pakistan, IPM, PAPA, Field Advisory Service

Outline:
- Reality cannot be ignored, but the realization of long term goals depends on shared goals and values.
- 1991, IPM started with 70 farmers.
- 1992, 450 farmers selected
- Revue of project annually for effectiveness, i.e. Why are farmers not adopting good practices?
- Demonstration of farms to other farmers. Video, written and group training.
- Identification of pests, scouting, economic thresholds, application techniques
- Indiscriminate pesticide use caused problems that have led to the need for IPM. Cypermethrin has caused drastic reductions of beneficials in vegetable crops, from 20000 / ha to 5-7000 / ha.
- Further training has increased sophistication, e.g. the use of ULV application.
- IPM has used the same amounts of pesticide, but doubled yield on selected farms of 3-5 acres.
- This is on the background of effective equipment, the use of recommended pesticide brands, and middle to matriculation level education.
- Some farmers still revert to previous practices without outside encouragement.
- Reasons for this include: poor education, lack of equipment, poor planning and strategy.

Questions:
- Increases in yields, are they due to better education as well as just IPM?

A. Better management in general is part of ICM / IPM.

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8. **Name:** Mr. R. Subramanian (Zeneca India)

Topic: Rice is a major issue in food production.

Outline:

- Much work on rice at this time
- IPM widely misused
- Indian Rice Research Institute, from 3 major pests 1965, to 13 in 1996
- Rice stem borer
    - Timing is vital.
    - 80% leaf loss in some cases.
    - Economic importance estimated by IRRI
    - No difference shown between using threshold versus prophylactic pesticide application. (If anything, IPM produces slightly lower yield)
    - Increased beneficials under IPM.
- Principles
    - Nutrition, weed control, choice of variety
    - Conservation of natural enemies
    - Weekly monitoring
    - Make the farmer an expert in decision making

Questions:

- Should we address the comments by groups like FAO that state successful IPM to be free of the involvement of pesticides?
- We should build a databank of correlation between pesticide use and crop yield benefit as opposed to no pesticide use.
- With regards to IRRI (Philippines) we should perhaps wait until the damage of pesticide free systems becomes evident to FAO.
- We should make it a matter of chemical registration to determine if there is any crop yield benefit in product use.

- *This is a political situation, not one of data.*
- *Group action and demand might be more effective than making scientific arguments.*
- *Demonstration to legislators and pressure groups is necessary.*
- *Current funding initiatives by governments region-wide are those that begin from a presupposition of pesticide use reduction.*

WEDNESDAY PROGRAMME

Participant Presentations. Session III

9. **Name:** Mr. L. Palis (Bayer Philippines)

Topic: Philippines (Video copy UQ)

Outline:

- 1989 Government institutes IPM as national policy
- Kasalikosan – 1993, national program finalised.
- Bio-control central to vision, a move away from products and toward principles.
- Government programs led to very high awareness in farmers and researchers.
- 44% of companies include IPM principles in their regional plans.
- Differences exist between industry and government definitions of IPM.
- CPAP in IPM, field trial, collaboration with University of Philippines
- Results concerning defoliation, predator numbers followed pests and both decreased with crop maturity
- Pest species; Defoliators dominate seedling stage, stem-borers and hoppers the early reproductive phase, and in the pre-flowering stage, defoliators removing the flag leaf were the most significant pests.
- Critical windows determined, decision to spray now based on thresholds
- Tool (Critical Window Tech) was adopted by most industry companies.
- Provided a farmer with a clear procedure to overcome reluctance to weekly monitoring.
- A series of government insect management programs are on-going in other crops. Wall of suspicion separates industry from Government so they are not included in these.
- Industry is working on new initiatives in mangoes, eggplant and vegetable crops.

Questions:

- Credibility of govt. and academia is not necessarily high, they are maintaining the line of chemical avoidance or minimization, and the results speak for themselves.
- Confusion results in tension between govt. and industry and are not served well by government information.
- There is a need to monitor the maintenance of practices by government influenced farmers after support money disappears. Hence problems with aid and teaching programs tied to specific practices.
- Government IPM tends toward definition by product use rather than total IPM. There needs to be more cooperation at the definition level. We need to demonstrate ourselves to the government as more than just retail organizations, based only on short-term sales benefit.

10. **Name:** Ooi Kok Eng (DuPont Malaysia)

Topic: Resistance of Diamond Back Moth on Cabbage

Outline:

- As many as 8-10 generations per year.
- Malaysian Cameron Highlands at 1000m+ elevation
- Resistance to many major chemical groups
- Excessive use to blame, as many as two uses per week.
- A pesticide alternation scheme, based on one mode of protection per generation.
- Successful initially but little follow up.
- MARDI, University, Govt. are involved
- Introduction of *Diadegma* sp and *Diadroma* sp.
- Little commitment or support from government, reduction in research on this pest
- Little confidence or knowledge among farmers, abandoning of thresholds and fear of yield loss.
- How does industry support IPM? Marketing and services, support development of programs, customer education, cooperation with shareholders, processors, food outlets etc.

Questions:

- Mosquito nets used in conjunction with the system allow buildup of fungal problems, snails, and are unable to exclude larvae.
- Pests actually leading to production shifts, it is sometimes more economical to import cabbage from Indonesia.

11. **Name:** Mr. Frank Lai (TAIA Taiwan)

Topic: IPM in Taiwan - General

Outline:

- Non-English speaking community.
- Government supports IPM. Government runs regions independently.
- Forecasting has a long history.
- Voluntary uptake of IPM is minimal.
- Education in practice mainly by government system.
- IPM must become more important, and industry's role must increase.
- Programs vary by crop, rice, maize, fruit crops (general), vegetables, flowers

and soybean/peanut

Questions:

12. **Name:** Mr S. Sayomchai (Dow AgroSciences Thailand)

Topic: Technology transfer in Thailand and in general

Outline:

- Farmers dislike government information services, as they do not give direct instructions for use
- On the other hand they distrust industry figures
- How can education occur?
- Farmers are sharp, but they have limited access to information.
- E.g. Light trap use via government provision of equipment. Two years later the equipment is not used. Light trap attracts moths, pesticide is expensive, other farmers encourage others because they want them to have the extra moths that come to the first person that uses light each night in a district. System fails as eventually everyone waits for someone else to be the one to light up first.
- Government does not reinforce information.
- Their initial system is often not concerned with costs, but follow up is expensive and once the task is "accomplished" the political will is lacking.

Questions:

- Cooperation is required between government and industry. Government extension is often the most appropriate channel to deliver new technology due to suspicions about industry profit motives. Industry is able however, to provide government with information, support and eventually, follow up after adoption.
- We also need to adapt the equipment that is currently used to increase effectiveness. It increases adoption and reduces farmer cost.

13. **Name:** Dr. R. Subramanian (Zeneca India)

Topic: Crop Protection Conference in India

Outline:

- ICPA – recognized as a body for responsible crop protection. Industry body for coordination.
- Create and add value; safe and judicious use, and IPM
- Body covers environment, safety effectiveness,
- Government, export interest and modernization, targeting agricultural industry. Agenda for action is presented by govt. and then after an entire day,

15 minutes is allowed to industry.

- Government is strong and aims to earn money, not to invest in industry development. Adoption of ladybird for IPM.
- Members of ICPA are now to be members of these committees.
- Pest and disease surveys, identify pesticide resistance, training master plan devised, all at govt. level. Some successes claimed are dubious. Money is available, but there is no assessment of success by industry.
- Need to correct material for training of farmers. Training of ICPA field force is essential. Bad ideas flow onwards and are copied.
- National Institute of IPM at Delhi
- Industry has 1500 workers, govt. 100 000

ICPA film.

- 1 Billion soon, requirement to grow more food
- Actual land area is reducing
- 25% cropping area reductions
- Research leads to new molecules after many years and many failures
- Modern practices and IPM, diverse techniques
- Minimal or no impact on environment
- Cut economic damage
- Govt. initiatives are good, ICPA boosts these, new products IPM compatible and env. friendly
- International expertise and Indian experience
- Seminar in Delhi, government, internationals and local industry met together for the first time. Very successful.
- IPM as an increment in agricultural production, and environment quality
- Industry initiatives focus on training
- Large assortment of industry and government figures discuss and are quoted on the benefits, intentions and move towards IPM. Definitions are biological + agrochemical + the rest.

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13. **Name:** Mr Ajit Kumar Nath (BASF Bangladesh)

Topic: IPM activities in Bangladesh

Outline:

- Agriculture is the main occupation, 69% of popn., 33% of GDP.
- Rice is the staple crop, providing 75% of calorific needs to popn.
- Pesticide use has increased 1995 (1750 tonnes) 1999 (2462 tonnes)
- 285 brands, 93 actives, 180gm / ha av.
- 20% crop loss due to pests.
- National policy based on IPM, mainly resistant varieties and mechanical

methods, resistance to pesticide organic chemistry. Pest surveillance requires strengthening.

- Pesticides only to be used where other methods fail. Legislation bans some import and usage.

- 1987, FAO spread of IPM. 1989-1995, government and donor groups focus on IPM. This now influences extension practices.
- National Policy, FAO, UNDP, Dept AG. Ext. finishes in 2002.
- Projects to train farmers in IPM.
    - Farmer field schools
    - under trainers,
    - under district,
    - under region,
    - under national council, run by federal minister
- Pesticide Association of Bangladesh, has run Safe Use of Pesticides since 1988.

Reports on Group Discussions

IDENTIFYING THE ESSENTIAL ELEMENTS OF I.P.M.

Group 1. (Rapporteur: Clive Pegg, Aventis Philippines)

- Realizing the new IPM paradigm
- Secure commitment of CEO's
- Approach to stakeholders (Academic, Farmer, Dept. of Ag.) outline projects and seek partnership. Help to survive downsizing.
- Nominate task-force (country and regional)
- Commission study to understand current behaviors
- Analysis and interpretation of study
- Definition of realistic objectives and action plans, approval from partners
- Agree on timelines, set targets
- Focus on a few key crops
- Identify information multipliers and cascade systems.
- Prepare training modules, define resource requirements
- Definitions of IPM, (role of chem., success factors and safe use to be built in).
- Responsibility of parties and funding, cannot come from private sector alone
- Look at utilizing mass media (simplistic, but stimulating)
- Consider use of high profile people
- Train internal end external extension specialists
- Appoint single person to each project as a champion

- Encourage simple field book record keeping
- Repeat field behavioral research at specific intervals to measure progress against baseline.
- Position IPM and safe use (+G.M.O.) under umbrella of PROPER USE
- All labels to contain info for IPM use
- Database to be created to record IPM data on all major products. Internet may be the way forward
- New products to be generated with data to ensure good IPM decision making possible

Comments

- Most influential person is the housewife, do not ignore her.
- Realism, FAO spent $200 mil in Indonesia and made little difference. Is broad training going to work?
- Including IPM information in performance criteria for chemistry is a good point.
- Consistent naming and practice across companies and countries is needed.

A. *Groundswell support to have another go at IPM. But it will take a good while to achieve it. Having all factors brought under one umbrella is a good thing for farmer understanding. Mass media in isolation will not work, it only stimulates interest and requires further support through other channels of communication.*

   We still need to convince forces within our own companies that are not believers in IPM under our definition. It can be controlled internally, with education and mandates by management.

Group 2. (Rapporteur: Mr F.V. Palis, Bayer Philippines)

- Definition, a list of issues, internally and then externally
- Internally; industry-wide acceptance of concepts, synergy of marketing, involvement of local companies (generics)
- Commitment;
    - Influence pesticide regulatory board,
    - find a resource budget,
    - get the CEO on-side,
    - Reward people for spreading the word,
    - follow through on efforts over time.
- Crop focus,
    - crop-specific IPM training modules,
    - target the audience – educators and technical staff.
- Clearly identify all stakeholders.
- Externally;
    - Cooperation with government and mutual acceptance,
    - Common training material,
    - Joint implementation,

- Clear measurement of progress,
- Lobby for support by public and pressure groups

Group 3. (Rapporteur: Mr Sakorn Tripetpaisal, Monsanto Thailand)

- Adoption at all company levels and then externally as well. This is essential.
- Gather information to convince executives and identify profit benefit
- Gain farmer support
- Improve company image through IPM
- Promote product life through IPM
- Middle level management is key and field staff must be trained
- Resources must be made clearly available
- Identify crop and area of extension at outset of projects and aim at potential successes first.
- Cooperation at all levels important; International and local companies, Dealers and distributors, Government, Science establishment, NGOs
- Identify benefits to farmers;
    - health, safety,
    - increased profit,
    - sustainability
- Farmer training
- Project evaluation

Group 4. (Rapporteur: Sayomchai, S., Dow AgroSciences Thailand)

- How to access good information on;
    - Biology,
    - Thresholds,
    - Crops,
    - Technology,
    - Consultants
- How to implement IPM at country level
    - Politicians have varying definitions,
    - IPM is run often by govt.,
    - Decisions belong to users (Farmers),
    - Need cooperation at all levels
- Training of staff requires ALL staff to be trained, marketing, commercial etc, as well as all technical staff.
- We should return to observe changes in 2001. Staff should also be assessed for their understanding.
- This may change focus away from quantity and toward quality.
- Work closely with government

- Choose a small number of crops to begin with as show-cases. Develop check-lists to generalize procedures.
- We will as a result improve our quality of life, and communicating this may improve the image of agrochemical industry.

- Develop a pesticide residue monitoring system as a mutual benefit to public and industry.

Comments
This will be a double- edged sword if industry is not on-top of its game.
Government must also be able to back up monitoring with actions.
Assessment of the individuals opens a can of worms, but may be essential to capture the degree of improvement achieved and provide feedback on training.

As an overall wish list, observe the Sainsbury's management checklist. This is not the scope of initial IPM endeavors. Water, nutrients and pest management are the first priorities, and the remainder can be included over time. None of the other aspects will be successful unless these things are covered as a basis for profit.

RICE IPM VIDEO - IRRI

What is similar to the APCPA video?
- Beneficial insect icons (spider / ladybird)
- Manage pests not eradicate them
- Improved decisions sought
- Elements and components of IPM listed
- Avoid indiscriminant broad spectrum applications

What are the differences in the IRRI vs. the APCPA video?
- Farmer empowerment not emphasized
- Education concerning nature and management of the pest problems
- Personal testimonies are missing
- Hygiene and quarantine are not mentioned
- Communication of results not mentioned
- Fear is emphasized as the motivation, rather than education
- Defines IPM as the use of pesticides as a last resort only.

What you would change if you were to re-make the video?
- Avoid fear
- Involve more stake holders
- More visual comparisons

- Application techniques and safety should be included
- Pathogens and weeds need more focus
- Discuss benefits to the farmer, economic (and others)
- What about IPM being used to increase production
- Discuss direct seeded rice
- Balance or pest and beneficial numbers to be mentioned rather than presence/absence
- Support medical claims or remove them
- Use established scientific material
- Give a balanced view of IPM
- Teach prediction of pest levels

What is missing from Rice IPM?
- Demonstration of benefit to farmers
- Partnerships between government and industry
- Commitment of will, ours and others
- Commitment of resources and leadership
- Illustrations and examples
- Farmer security, confidence and support through change

Additional software resources
TROPRICE.exe
Downloadable from the IRRI site. (Also visit the APCPA site)

SEVERITY PRO.exe
Training of assessment of disease damage.
Very important to assess foliar infection rates.

SO WHAT NOW ?

- Industry is now able to declare a new paradigm for IPM.
- MCPA has an IPM committee If we provide a module that is localized, we should then see the distribution we can get. There is a need to have the credibility boosted through use of a government department or a university in the process.
- Those returning to national associations return, brief the national associations, let them decide on how they want to proceed to the next stage. They may unite, or go their own way as individual companies. This should be achieved within a short period (2 months?) and return with proposals for action plans
- Internal training is the imperative for all delegates. We can provide companies with the tools to do this.
- There is a need to convince the world that biotechnology is part of the IPM toolkit

Target groups:
- Establish in-company training requirements, especially for sales, marketing and

technical personnel. Possibly also recruitment and advancement.
- Other target groups include government extension officers
- Academia
- NGO.s, both grass-roots and advocacy
- Media

Wyn Ellis: ACPCA
- A need to have the written and resource support from CEO's concerning IPM in the Asia-Pacific Region. This will be brought to APCPA office bearers meeting, GCPF, and at GCPF executive meetings.
- APCPA to set up a distance learning module for IPM, accessed via WWW, offering an academic / professsional qualification
- National Associations to develop, implement and fund national level activities on IPM.
- All information to be put on the APCPA website under a password protected section to be updated regularly.

CONCLUSION

The involvement and contributions of participants in both the formal presentations and discussion of issues was outstanding. The range of case studies presented by participants illustrated and reinforced the principles of IPM and the need to adopt and implement IPM strategies in cropping systems throughout Asia-Pacific.

The discussion groups identified the essential elements of IPM. They very successfully highlighted the areas requiring the industry's attention and action. The rice case study on the final day further reinforced the principles of IPM and the importance to industry of working with all stakeholders to achieve IPM outcomes that are economically viable and practically feasible. The comparison of the training video on IPM prepared for use by APCPA with the video on IPM in rice prepared by IRRI, highlighted areas requiring particular attention.

THE FUTURE

The session on "What Now?" identified a number of important action points and time-lines. Country associations agreed to review their activities and to report back with proposed action plans for developing IPM within two months of the train-the-trainer workshop.

THANKS

We wish to thank all participants for their enthusiasm, cooperation, and friendship.

Particular thanks are due to Wyn Ellis and his staff, Chatthip and Chujit, who organised the workshop and provided excellent support during the two days in Chiang Mai.

Graham Harden
A/Prof. Harden AM

APCPA
IPM Trainer - Training Workshop

Comments & Feedback Summary

A = Good B= Satisfactory C= Unsatisfactory

	A	B	C
Introduction, History and Course Structure	15	11	1
Introductory Background, IPM Definitions	**19**	**8**	
IPM - A Total Approach to Pest Management	**18**	**8**	**1**
IPM Video	**17**	**9**	**1**
Presentation by Delegates	**13**	**13**	**1**
Field Trip	**1**	**20**	**6**
Analysis of Video/Discussion points	**19**	**7**	**1**
Identifying the Elements of IPM	**20**	**6**	**2**
Delegates Definition of IPM	**14**	**13**	
Why is IPM Important?	**23**	**4**	

General Comments: Overall the general comments were mostly lists of actions plans which indicates ownership of the course direction by the delegates.

- A well organised and presented workshop, content well balanced and good participation by members. I learnt a lot.
- Field visit not satisfactory, needs to be an IPM farm. [Similar comment from several participants.]
- Need examples of success stories at country and international level.
- Congratulations on video content and video analysis.
- Overall the train-the-trainers programme was very good.
- Programme was well organised.
- Good interactive workshop. Must have follow-up and action plans.
- Very good chance to exchange experiences of each country about the implementation of IPM.
- We need to face the attitude change - adopt IPM principles in the company (industry goal).

[One participant was very negative about the workshop.]

APCPA
IPM Trainer - Training Workshop

Comments & Feedback Summary

A = Good B= Satisfactory C= Unsatisfactory

	A	B	C
Introduction, History and Course Structure	55%	41%	4%
Introductory Background, IPM Definitions	70%	30%	
IPM - A Total Approach to Pest Management	66%	30%	4%
IPM Video	63%	33%	4%
Presentation by Delegates	48%	48%	4%
Field Trip	4%	74%	22%
Analysis of Video/Discussion points	70%	26%	4%
Identifying the Elements of IPM	74%	18%	8%
Delegates Definition of IPM	52%	48%	
Why is IPM Important?	85%	15%	

General Comments: Overall the general comments were mostly lists of actions plans which indicates ownership of the course direction by the delegates.

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