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Working Group on Pesticides

DRAFT GUIDANCE DOCUMENT ON POLICY INSTRUMENTS AND MEASURES TO STIMULATE THE ADOPTION AND USE OF IPM

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Mr. Leon VAN DER WAL
Tel: +33 (0) 1 85 55 93 10; Email: leon.vanderwal@oecd.org

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This following paper was prepared by the Expert Group on Integrated Pest Management (EGIPM). It is a draft of a guidance document which has been developed for eventual publication. The Chair of the EGIPM will present this document during the Working Group meeting, as well as a report on the current status of, and future plans for, the EGIPM.

ACTION REQUIRED: ***The Working Group on Pesticides is invited to review and comment on the following document.***

DRAFT GUIDANCE DOCUMENT ON POLICY INSTRUMENTS AND MEASURES TO STIMULATE THE ADOPTION AND USE OF IPM

(19 June 2017)

FOREWORD

The document provides guidance to governments and advisors of governmental organisations on options for establishing a policy framework for promoting Integrated Pest Management (IPM), in particular establishing_policy instruments and incentive systems to stimulate IPM.

Box 1.1. What is IPM?

'Integrated pest management (IPM) is an approach to the management and control of agricultural pests which relies on site- and condition-specific information to manage pest populations below a level that causes economic injury and that minimises risks to humans and the natural environment.

Although any among a wide range of pest control agents may be used (including chemical sprays), IPM generally stresses the use of alternatives, such as crop rotations, mechanical cultivation, and biological agents, where such methods are deemed to be effective.'

Source: Agricultural Policies in OECD Countries: Monitoring and Evaluation 2000, Glossary of Agricultural Policy Terms, OECD 2003 (http://stats.oecd.org/glossary/detail.asp?ID=1379)

The guidance was developed by the OECD Expert Group on Integrated Pest Management (OECD EGIPM) and is based on experiences with policy instruments and incentive systems. The conclusions were drawn from a survey about policy instruments and incentives to stimulate the adoption and use of IPM methods in agriculture which was conducted by the OECD EG IPM in 2013.

The development of this report was overseen by the Chair of the EGIPM, Silke Dachbrodt-Saaydeh (Germany) and Johan Edens, Jos Wubben (The Netherlands), and

was reviewed on several occasions by EGPRI members as well as by delegates of the Risk Reduction Steering Group, a sub-group of the Working Group on Pesticides.

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Introduction

1. Already for many years OECD engages in harmonisation processes for pesticide approval and registration. Nowadays cooperation between countries is going further beyond and addresses strategies for the sustainable use of pesticides contributing to further risk reduction. Integrated Pest Management (IPM) strategies are a means to achieve these goals and OECD has developed activities in this area. In particular, the Expert Group on Integrated Pest Management was set up as a result of the "OECD Workshop on IPM - Strategies for the adoption and implementation of IPM in agriculture contributing to the sustainable use of pesticides and to pesticide risk reduction"[1], held in Berlin, Germany, on 16-19 October 2011. The workshop recommendations constitute the key work areas of the Expert group.

- Facilitate coordination and information exchange about IPM
- Promote and develop policies in favour of IPM adoption and implementation
- Develop indicators of IPM adoption and impact
- Facilitate awareness raising about IPM among the public & food chain operators

2. This guidance document was developed by the OECD Expert Group on IPM within the work area "Promote and develop policies in favour of IPM adoption and implementation". The OECD EGIPM was tasked to develop guidance on "Policy instruments and incentives to stimulate the adoption and use of IPM-methods".

3. The objectives were to carry-out a survey and undertake literature search on policy instruments and incentives in order to:

- review policy instruments used in countries and incentives that facilitate the uptake of IPM;
- identify best working incentive systems (motivation for farmers), systems for knowledge-transfer and indirect incentives into IPM production systems, research programmes that encourage IPM adoption and implementation;
- apply lessons learned from the horticultural sector, i.e. minor uses programmes, regarding incentives and other approaches that could be applied to facilitate the uptake of IPM;
- develop guidance for incentive systems.

4. The guidance is based on the survey results conducted within the eleven OECD EG IPM member countries and three international organisations (CLI, FAO, IBMA) in

[1] Workshop report: ENV/JM/MONO(2012)32

2013 to gather the extent of available measures in OECD countries about policy instruments and incentives to stimulate the adoption and use of IPM methods in agriculture.

Review of the incentives and policy instruments having an impact on IPM adoption

5. The survey identified a number key incentives and policy instruments which are categorized as follows:

1. Laws, regulations and policy
2. Technical instruments
3. Financial measures
4. Market-based measures

1.1 Laws, regulations and policies

6. The national policies provide the framework for pesticide regulation. Regulatory provisions concerning the authorisation of pesticides are undoubtedly the core elements of national policies concerning plant protection. Review of authorisations can result in the withdrawal or additional requirements concerning the use of specific pesticides. For example in Australia, numerous insecticides under review and will lead to fewer broad-spectrum chemical control options for growers.

7. On the global level, the FAO Code of Conduct on Pesticide Management, a voluntary standard of conduct for public and private entities, promotes IPM. Most countries address the implementation of IPM by different approaches. For example, in the USA many of the federal programs currently in place were borne out of the 1996 Food Quality Protection Act (FQPA) and following acts which amongst others resulted in the founding of four regional Integrated Pest Management Centers and the implementation of federal review programs for existing pesticides have created the conditions under which the role of IPM could expand. The legislation requires an IPM plan to be in place before permits from the National Pollutant Discharge Elimination System are granted. The USA also stated that most IPM laws and regulations have been in non-agricultural settings, e.g. water and nature protection. Additional regulations that are considered beneficial for IPM have also been put forward.

8. In modern economies, there are multiple institutions and organizations that have knowledge of IPM or expertise in agri-environmental policies or working with farmers. Such cooperations can allow for expertise to be properly allocated. Canada, for example, achieved significant impact with the establishment of the Pesticide Risk Reduction Program (PRRP) as a joint initiative between Agriculture and Agri-Food Canada (AAFC) and Health Canada's Pest Management Regulatory Agency (PMRA). PRRP supports reduction of risks from pesticides used in agriculture through improving grower access to IPM tools and approaches.

9. The EU regulates the use of pesticides within the Sustainable Use Directive (Dir. 2009/128/EC). In response to the Directive MS had to set up National Action Plan in order to define their national policies supported by goals and deadlines toward risk reduction. The articles of the Directive aim at risk reduction arising from pesticides use. IPM, i.e. the general principles on IPM (Annex III), are mandatory for all professional users since January 1, 2014 (Art. 14). Additionally MS have to promote low pesticide-input pest management and encourage the use non-chemical methods.

National Plans or Road maps

10. National Plans or Road maps are useful instruments to define and set goals and generate global stakeholder support on common goals (e.g. National Roadmap for IPM in the USA or Nation Action Plans in the EU). They are drawn up in cooperation with stakeholders (farmer organisations, pesticide industries, research centres, consumer organisations, environmental organisations, regional and federal authorities/agencies, IPM practitioners, IPM experts, environmental NGOs, water board organisations, producers of biological control agents, pesticide traders, health organisations, etc) and contain actions for every stakeholder group. The progresses of the realization of the actions are discussed with the stakeholders on a regular basis in different panels or platforms.

11. On farm level individual management plans increase farmer awareness about the upcoming management decisions and thus encourages strategic decisions. In the Netherlands, for example, each farmer has to make a "plant protection plan" before the beginning of each growing season in which describes the IPM strategy for the farm. In Switzerland, the "Swiss Cross Compliance" contains rules on pesticide use which can serve as production guidelines.

Other legal instruments

12. Other legal instruments which also can work toward and increased IPM adoption are regulations for the reduction of emission to the environment. They indirectly enhance the improvement of farming practices in favour of the environment. For instance contribute buffer zones near surface water and field margins to water protection. Accordingly, growers have to obey specific requirements for pesticide application equipment (e.g. the use of drift reducing techniques) and choice of most suitable pesticides. Other programmes aim to increase biodiversity through introduction of hedges and field margins.

Facilitate the registration of IPM-compatible products and low-risk pesticides

13. IPM-compatible products, e.g. biological control agents, and low-risk pesticides can enrich the suite of tools available to farmers to control pests and diseases as well as counteracting or slowing down pesticide resistance development. The USA, for example, created a division at EPA devoted to the registration of biopesticides. In the EU Regulation 1107/2009/EC there is a provision to foster biological pesticides and work on a simplification procedure for low risk pesticides.

Removing harmful policies

14. Even if IPM adoption is promoted using sound policy instruments, there may be other existing policy instruments in place that could deter the adoption and proliferation

of Integrated Pest Management. Therefore, a solid policy plan for the promotion of IPM should seek to eliminate harmful policies, if existent in the member countries. Such disincentives for the adoption of IPM include for instance removing laws and incentives that stimulate the use of high risk pesticides; removal of production based subsidies and replace them by agri-environmental policies that require the farmers to implement measures beneficial for the environment in exchange for receiving funds, removal of demands for zero tolerance for 'beneficial insects'.

1.2 Technical incentives

Education and training

15. According to the OECD report on the evaluation on agri-environmental policies (OECD 2012), the success of a program (IPM policies) depends largely on farmer participation and involvement. This should be taken into consideration and acknowledged that adoption of IPM will be greater if it is understood by farmers, and farmer-driven. Given these circumstances, involving the farmer and helping him to develop his knowledge is crucial to the extent of IPM adoption and therefore to designing policy.

16. The main approach to developing farmer knowledge of IPM is through training. Farmer training in Integrated Pest Management is rated to be of high importance and is a mean that has been widely implemented throughout member countries.

17. For example, in European Member States it has become compulsory with the EU Directive 2009/128/EC. The directive requires setting up systems both for initial and additional training with certification systems for different user groups (growers, advisors, sales personal). The training contents cover IPM strategies by learning about IPM methods, biological pest control methods and organic farming. The general principles of IPM which are also subject of the training cover the decision making process, starting from the consideration of preventive measures, monitoring of pests and diseases to the final choice of the appropriate control method considering resistance management and the control of success. Through training farmers can enlarge their knowledge about IPM.

18. A suite of means is available, ranging from IPM tools for monitoring or decision support to crop or sector specific IPM guidelines developed by ministries, universities, international organizations, industry, research organizations and/or grower associations and sector groups. Guidelines offer crop-specific information, preferably on regional level, and provide a suite of tools to the farmers in order to support their crop protection decisions. The use and impact of all tools depends largely on the ability of farmers and growers to use them appropriately and thus on training or advisors as intermediaries.

Extension services

19. Extension services are marked as having a high impact on farmer knowledge. The success of many extension programmes delivers evidence on the importance for advisory support and the support in the decision making process. Extension programmes can be provided either by public and government institutions or extension services or organised by private companies such as traders of plant protection products or they can be hold frequently and in close collaboration with regional state universities or other research institutes. Regardless of the provider, the extension information should be unbiased and promote the IPM approach.

20. Training and extension also have the role to generate tailor-made information for the growers and support the decision process. Such information and support also includes tools for monitoring or decision support. The investment in the development of forecasting and DSS is an essential measure to support appropriate crop protection decisions. Assisted by monitoring tools and decision support systems (DSS) farmers are enabled to base their crop protection choice on weather and pest/disease pressure information. Trainings can take various forms, such as grower workshops or field demonstrations.

Field demonstrations and Farmer workshops

21. Through field demonstrations and workshops farmers can extend their knowledge about IPM at work. They can receive a solid training in the various techniques used for IPM and additionally share experiences with other farmers and experts. Also, on-farm experimentation managed by farmers with the assistance of extension officers and researchers proves as a valuable policy. Such visible results, tested and demonstrated methods at field days, workshops and especially on-farm demonstrations are more likely to be adopted it at a later stage. They can be organised by private companies, public or governmental organizations, or both. These organisations include research organisations, extension services, universities, agro businesses, and government bodies. Additionally, farmers can be informed about positive IPM results, via field days, workshops, WebPages on IPM, research extension programmes. For example, prefectural governments in Japan have prepared demo fields for different crops to improve farmers' understanding of the effectiveness of IPM. In Canada, apart from field demonstrations and workshops, web resources have been made available for farmer to consult online free of charge.

IPM pilot projects

22. One of the main barriers to IPM adoption is fear of crop or profitability loss. One way to counter this fear is to set up pilot projects in each region to assess the viability of IPM and its strengths and weaknesses against other farming techniques. In IPM pilot projects new IPM methods are tested in practice at research stations and demonstration farms, in order to improve these methods and make them ready to use for and tested by farmers. IPM demonstration farms exist in e.g. Denmark, France and Germany and provide deep insights on the farmer decision making process and levers to foster IPM uptake. Pilot projects can also be used for field demonstrations and for socio-economic assessments. The agricultural institutions in respective countries could offer funding for these pilot projects in order to promote IPM adoption.

23. Other countries like Germany run long term experiments on crop protection in order to show the effects of long-term management decisions and the potential of IPM measures. Such experiments are likely to reduce the risk aversion and reluctance to change farming practices.

24. In the developing country context, there have been a significant number of aid programs directed to training farmers of developing countries to practice IPM. In particular, the USDA, through its Cochran and Borlaug fellowship programs, has invited several farmers from all over the world to take part in workshops on Integrated Pest Management techniques (WTO 2010). Even though this specific policy is more pertinent to developing countries, it could also be adapted for certain farmers in OECD countries in areas or crops where IPM adoption is low. This could be a way of spreading the

knowledge of IPM or even a mechanism to "train trainers" for posterior workshops on IPM practices in the country.

Farmer learning / self-assessment

25. Farmer self-assessment and self-reflection are also elements of farmer learning. Different approaches are suitable for checking whether sufficient pest control and expected results were achieved by the most suitable means in a sustainable manner, also considering the reduction of risks for the environment and human health. For example, farmer checklists or score systems can be used in a multiple way depending on their design and scope. On one hand, they can serve as self-assessment tools for farmers themselves or could be used in cooperation with extension services or other organisations on farm level in order to gain an overview about the current developments in crop protection and the uptake of specific IPM measures, e.g. checklists farmers can fill in on the internet.

1.3 Financial incentives

26. Cross cutting or overlapping with most other instruments is financial support which is bound to be crucial for the adoption of IPM and nearly every policy will need initial funding to succeed. Either funding is required for developing the institutional structure to support those policies at country/ regional level or to carry out specific projects mainly at farm level. Financial support can take various forms: direct funding of IPM projects, funding for the purchase of decision-making tools, precision and application technology, funding for research focusing on Integrated Pest Management, or funding for grower workshops and extension services.

Financial incentives at farm level

27. At farm level, financial incentives are especially linked to the decision of farmers to adopt new technologies. Farmers perceive introducing new practices as a risk. However, if a state or agency assumes this risk by funding the pilot project or necessary technology, the decision is made easier and the adoption rate might be higher. Such pilot projects will buffer possible losses for the volunteer farmers and will this way increase the likelihood of volunteering. Furthermore, face-to-face advice or extension support would increase the preparedness of farmers to apply new methods. Low risk for the farmers should be at the centre of any IPM promotion policy, and mitigating the risk of crop or profit loss is conducive.

28. Subsidies for the introduction of biological control gain especially in area wide regional programmes success and need to be well supported by a good collaboration between advisors and farmers.

29. In order for farmers to participate in training programmes on IPM, it might be necessary to offer funding to help them bear the costs of the training or to subsidise partly the costs of training in order to incentivize their participation. Many countries offer funding for farmers to participate in training programmes or offer support in facilitation (e.g. materials, guidance documents, tools). In Denmark, for example, farmers participating in a specific IPM extension programme for two years can get up to 80% of costs refunded. Although other countries believe that if solely the farmers benefits from

the training the training should be funded by the farmers. However, if the reduction of risks to human health and the environment are issues the society at large is concerned.

30. Funding for IPM training for independent advisors and to provide advisors with excellent IPM knowledge will help to further advance IPM at farm level. Additionally, for advisors who generate part of their income from selling pesticides it might foster the dissemination of unbiased factual information.

31. Another option, although not explored or reportedly used by most of the respondents are insurance schemes for minimizing the risk of IPM adoption. Only the USA has informed that private organizations have implemented them with varying levels of success.

Subsidies and direct payments

32. *Subsidies and direct payments* can be offered for changing the practices of farmers in a way that is beneficial for the environment (agri-environmental schemes), for instance as a reduction of taxes for investments on IPM-equipment or the participation in IPM extension programmes. Such measures are in place in the USA, growers can participate in commodity check-off programmes that generate income for that commodity to conduct marketing and research.

33. In Europe's Common Agricultural Policy (CAP), specifically the Rural Development Programme (2014-2020), complements the system of direct payments to farmers with the so-called "Greening". The Greening includes direct payment for crop diversification, maintaining permanent grassland and dedicating 5% of arable land to 'ecologically beneficial elements' ('ecological focus areas').

34. In Quebec (Canada), for example, according to the agri-environmental programm for the support of the provincial phytosanitary strategy (Appui à la Stratégie phytosanitaire québécoise en agriculture), IPM projects of 1, 2, and 3 years duration received funding for $30,000, $50,000, and $70,000, respectively. In total, financial support covered 80% of the development project costs, and 90% technology transfer project cost. Through the same program, the provincial government in Quebec also provides financial incentives to growers who adopt scientifically proven IPM tools and practices made available through local research and development programs. Eligible expenses include the purchase of: insect netting (row covers), mechanical cultivators, sterile male flies for field releases, equipment for banded pesticide applications, equipment for biobed construction for safe disposal of pesticide rinsate, etc. In Japan, subsidies are available for adopting new farming technologies.

Financial incentives at country and regional level

35. At country and regional level Public institutions play an important role in financing IPM related activities (agricultural research, grants, etc.).

Taxes on chemical pesticide purchases

36. In essence, a farmer's decision to adopt IPM can be understood as a comparison between the costs and benefits of adoption and non-adoption. IPM is usually seen by farmers as more expensive, due to the fact that the farmer must put in more hours of work when practicing IPM, even if he saves money on the purchase of pesticides. Depending on the region or country, taxes on chemical purchases can have the effect to reduce

pesticide use in general or hazardous pesticides in particular. But a broader benefit can be generated from such resource only if it remains in the farming sector and is used to fund research activities (applied and fundamental), support the consolidation of extension services as regards to more direct advising activities to farmers in measures to stimulate IPM or the participation of farmers in IPM extension programmes.

1.4 Market-based measures

37. The marketing of the growers produce is their source of income thus market based incentives are a way to increase their sense of urgency applying IPM.

38. Although the influence of governments is rather limited in this area there are two approaches to stimulated uptake of IPM-measures by farmers: i) Countries should encourage retailers to include IPM principles such as monitoring, minimal pesticide use, use of selective pesticides and alternatives and good application into quality standards and ii) farmers who apply stricter IPM rules and quality standards receive a guaranteed price premium by retailers. However, currently there are no subsidies in place for the purchase of IPM products.

39. Engaging with supply chain relating to IPM and incorporating more details of e.g. pest management practices in quality assurance standards would allow for more selective, i.e. target-specific, products to be used. By building tolerance of larger numbers of traceable active substances the protection of beneficial insects could be increased.

40. In some countries labelling and the identification gain better recognition of regional IPM products, when accompanied by communication and awareness campaigns.

41. It is also possible for growers to be dissuaded from practicing IPM because of export market concern or other secondary or retailer requirement. Such barriers to IPM can be overcome by increasing transparency and understanding of the production systems. For example, the FAO organizes such a “match making” marketing with the growers in the Middle East to identify and establish contacts with major importers.

42. Additionally, farmers may be encouraged to form export alliances or joint venture. This technique can add reliability to the exporting group and benefit the adoption of IPM oriented towards the export market.

1.5 Indicators

43. Policy assessments and indicators are extremely important instruments in policy evaluation. They allow measuring the success in general, the degree of adoption of IPM specifically and the success of certain instruments.

Adoption/uptake indicators

44. To measure the degree of adoption of IPM and to evaluate the success of the IPM-policy or specific policy instruments surveys on IPM adoption are to-date the most common instrument Alternative methods could be checklists or scoring systems as well as self-assessment methods . Yet, more methods would need to be developed or adapted for the purpose of assessing IPM uptake.

Impact indicators

45. Impact indicators are most suitable to indicate trends in risk reduction. Pesticide risk indicators can be used to gather, generate or provide information on potential risks associated with the use of pesticides. There are various indicators available: Pesticide Load Index (DEN), SYNOPS (potential environmental risk of pesticides) (GER), Environmental Impact Indicator (NL), Environmental Impact Quotient (USA), etc.. The OECD Expert Group on Risk Indicators has produced a Report on Pesticide Risk Indicators. The Pesticide Risk Indicator Evaluation Report (PRIER)2 is a tool to establish an overview of available pesticide risk indicators in OECD member countries. The PRIER and its summary tables promise great value in supporting the design and execution of policies on sustainable use of pesticides, both for risk managers and for pesticide users. .

46. There is wide agreement that the measurement of IPM impact is a challenging and complex task. Existing indicators may fulfil several requirements but none were designed reflecting the specific needs of IPM implementation which reaches further also into the inclusion of preventive and non-chemical measures. There is a need for user friendly instruments to show change in risk (both human and environmental) following the implementation of IPM systems. These impact indicators should target the ex-ante (system level) implementation of IPM, by comparing scenarios or by pinpointing (technical) measures and rating the performance compared to a benchmark (trend), as well as the ex-post (policy level) system changes.

Cost-Benefit Analysis

47. Another important aspect of measuring the success of IPM is Cost-Benefit Analysis. Additionally such analyses serve the transparency and argumentation in favour of adopting IPM approaches. Despite this importance, it has to be acknowledged that cost-benefit analyses are typically carried out by research institutes for individual IPM projects or for simulating and comparing the outcomes of different scenarios. These analyses are typically crop- and pesticide- specific, only a few holistic studies can be found.

Conclusions

48. The need for and the recognition by governments to explore the range of policy instruments to incentivize or stimulate IPM adoption is evident and increasing. The Integrated Pest Management approach is always crop-and-location-specific and dynamic by nature. Different institutional and regulatory environments in different countries need to be considered, as well as the diverse levels of economic development and degree of

[2] Report on the Online Pesticide Risk Indicators Database (PRIER) - ENV/JM/MONO(2016)8

IPM implementation in various countries, adding to the complexity of the situation. This multi-factorial situation should be recognised, a multidisciplinary approach acknowledged and several instruments should be considered when developing new approaches and incentives to stimulate IPM adoption.

1. The national policies and regulatory provisions concerning the authorisation of pesticides should create conditions under which the role of Integrated Pest Management could expand. Solid policy plans for the promotion of IPM should seek to eliminate harmful policies, if existent, that could deter the adoption and proliferation of IPM.
2. National Plans or Road maps are useful instruments to define and set goals and generate global stakeholder support on common goals. The involvement of multiple institutions and organizations that have knowledge of IPM or expertise in agri-environmental policies or working with farmers can allow for expertise to be properly allocated.
3. Other legal instruments such as regulations for the reduction of emission to the environment can work toward an increased IPM adoption. They indirectly enhance the improvement of farming practices in favour of the environment.
4. Facilitate research for the development and the registration of IPM-compatible products, low-risk pesticides and biopesticides which enrich the suite of tools to control pests and diseases as well as counteracting or slowing down pesticide resistance management.
5. The success of IPM policies depends largely on farmer participation and involvement. Farmer training in Integrated Pest Management is of high importance and thus essential in conducive policies. Furthermore extension services having a high impact on farmer decision making processes. Governments should ensure that regardless of the provider, the training and extension information should be unbiased and promote the IPM approach. Also, IPM guidelines developed by ministries, universities, international organizations, industry, research organizations and/or grower associations and sector groups offer regional crop-specific information and allow farmers to choose from a suite of tools supporting their crop protection decisions. Tools for farmer self-assessment and self-reflection can be based on IPM guidelines and help governments to evaluate current developments in crop protection and the uptake of IPM.
6. Governments are encouraged to facilitate useful mechanisms of dissemination such as pilot projects to assess the viability of IPM and its strengths and weaknesses as well as conduct socio-economic assessments. Further means of communication are field demonstrations and workshops organised by research organisations, extension services, universities, agro businesses, and government bodies.
7. Incentives should be designed to facilitate the necessary development. Sources for financial support can be subsidies and direct payments. Financial incentives at country and regional level public institutions play an important role in financing IPM related activities. At farm level, financial funding of pilot schemes can buffer risks of the adoption of new technologies by farmers. Financial support to IPM training and extension activities helps foster the dissemination of unbiased factual information. Low risk for the farmers should be at the centre of any IPM promotion policy, and mitigating the risk of crop or profit loss is conducive.

8. Sources for financial support can be taxes on chemical pesticide purchases. Depending on the region or country, taxes on chemical purchases can have the effect on pesticide use. But a broader benefit to IPM can be generated from such resource only if it remains in the farming sector and is used to fund applied and fundamental research activities.
9. The market, as the source of farmer income, has major importance. Governments can stimulate retailers to include IPM principles into quality standards and encourage a guaranteed price premium by retailers for farmers who apply stricter IPM rules.
10. Whilst a number of approaches are utilised in several countries, such as financial support for training and extension, public funding for multidisciplinary research, governments should engage also in the evaluation of the IPM-policy or specific policy instruments concerning the uptake by farmers as well as the reduction of risks for human health and environment by impact indicators.