Federal Ministry
of Food, Agriculture and
Consumer Protection

# EU Expert Meeting on
# National Action Plans on Sustainable Use of Plant Protection Products

Federal Ministry of Food, Agriculture and Consumer Protection
Wilhelmstraße 54, 10117 Berlin, Germany

**June 5-6, 2012**

## Workshop report

[The first draft of the report dated of 11 June 2012 was prepared by DE and revised by: FI, EE, BG, UK, AT, CZ, SE, DK, BE, FR.]

The 23 delegates from 16 Member States (AT, BE, BG, CZ, DE, DK, EE, FI, FR, IE, LT, LV, PL, SE, RO, UK) were welcomed by the host Wolfgang Zornbach from the Plant Protection Division of the Federal Ministry of Food, Agriculture and Consumer Protection in Germany.

The objective of the meeting was information exchange about the implementation of the sustainable use directive 2009/128/EC, but mainly focused on the status of development and main areas of action within the national action plans (NAP). Presentations were given by 13 MS (AT, BE, CZ, DE, DK, EE, FI, FR, LT, LV, PL, UK); BG provided a written summary of the current situation. The goal of the discussion about current achievements, positive experiences, gaps and bottlenecks was to encourage the final work for preparing the NAP by the end of this year.

The list of presentations by MS was supplemented with information about activities and first results of the SCAR Working Group on IPM presented by Julius Kühn-Institut (JKI), Federal Research Centre for Cultivated Plants, DE.

The main results of the workshop about the current activities concerning the implementation of NAP by MS will be presented by Wolfgang Zornbach at the Forum of Expert Group on Sustainable Use of Pesticides (directive 2009/128/EC) in Brussels on June 20, 2012. The presentations given in Berlin and the workshop report are available at Germany's NAP homepage: **http://www.nap-pflanzenschutz.de/en/**.

In preparation of the meeting and presentations, MS were asked about the current situation of the NAP concerning:

- Actual situation, legal background.
- Quantitative and qualitative targets of the national action plan (already agreed, planned or under discussion).
- Main areas of actions.
- Available or planned indicators to determine progress, including risk indicators.
- Public communication, stakeholder involvement.
- Problems, bottlenecks etc.

**Actual situation, legal background**

MS have already implemented or revised elements of the SUD (eg requirements of pesticide use, training, inspection of application equipment) long before the SUD was released in 2009. IPM or special tools, eg decision support systems, biological control measures, are used voluntarily by farmers for several years. In some cases, therefore, only a revision of existing regulation is needed. The development and implementation of NAP are differently challenging for MS.

Independently from the SUD, many MS have already implemented a NAP (BE, DE, DK, FR, SE, UK). Such a history makes the implementation of the SUD much easier for those MS than for MS without such experiences. Therefore, information exchange between MS is important.

In almost all MS, the draft of the NAP is in the phase of intergovernmental discussion, except AT where each one of the nine Bundesländer will develop and implement its own action plan. But considering regional differences in implementing the plans will be a challenge for some MS (AT, BE, DE, FR).

In many MS new plant protection legislation has already come into force and many requirements of the SUD are legally implemented.

**Quantitative and qualitative targets of the national action plan**

Qualitative and quantitative targets in NAP are mainly focused on (1) reduction of risks arising from pesticide use, (2) reduction of exceeding of MRLs, and (3) encouragement of IPM. Targets are often classified in main- and sub-targets. Already publicly available quantitative targets in MS are rare, except CZ, DE, DK, FR.

**Main areas of actions**

Actions are generally linked with targets.

Training of farmers and advisors, inspection of sprayers, water protections, and implementing IPM guidelines, which go beyond the general principles of Annex III of the SUD, are key actions in MS.

To protect the environment and water in particular, MS use different approaches related to buffer zones. From fixed zones up to 25m to flexible zones depending on the product and application equipment including the use of low drift nozzles.

Use of biobeds to remove pesticides is recommended by many MS (particularly LT, BG, UK).

**Available or planned indicators to determine progress, including risk indicators**

MS differentiate often between environmental, economic and social indicators to address the three pillars of sustainability. In many MS, indicators are under discussion and their status will be decided after consultation.

In many MS, trend or indirect indicators are available or planned, eg quantity of pesticides sold, numbers and use of biological pesticides, number of user certificates, area of organic farming, number of sprayers inspected, farm bird index, while MS await a proposal for harmonised indicators at European level. In general, these indicators don't indicate risk reduction; but they indicate actions which can contribute considerably to risk reduction.

Some MS use data on pesticide use to express the trend in use intensity with a treatment frequency index (DE, DK, FR).

A great difference consists in the availability of feasible impact indicators to measure progress in risk reduction. Impact indicators are used in DE and BE.

Many MS will use the action plan to develop and test useful indicators.

There are cases where lack of resources for research or data acquisition prevents updating of existing impact indicators (FI) or where Government policy to reduce burdens on industry and other stakeholders and Government restrict significant development of new indicators (UK).

**Public communication, stakeholder involvement**

All MS have – to different extents – involved in their development of action plans responsible ministries, authorities, farmer organizations and other stakeholders. But, participation of NGOs from the environmental protection or consumer protection side differs between MS.

Establishment of theme specific short-life working groups set up as required are very effective (BE, CZ, DE, FR, UK).

In all MS, a key issue is to provide balanced information to the public.

Websites are considered as main tool for communication with the (national) public. Some sites already exist[1]:

- BE: **http://www.health.belgium.be/eportal/Environment/Chemicalsubstances/PRPB/HowthePRPBworks/index.htm?fodnlang=en**
- CZ: **http://eagri.cz/public/web/mze/zemedelstvi/udrzitelne-pouzivani-pesticidu/**
- DE: **http://www.nap-pflanzenschutz.de/en/**
- DK: **http://www.vfl.dk/English/NyEnglishsite.htm** and **http://www.mst.dk/English/Pesticides/**
- FR: **http://www.agriculture.gouv.fr/ecophyto**
- UK: **http://www.pesticides.gov.uk**

**Problems, bottlenecks etc.**

MS expressed concerns about resources for efficient advisory field services in particular related to IPM. The importance of independent advice and its accreditation was expressed by MS. Networks of advisors are needed to improve extension in IPM. Finally, efficient schemes to train the trainers were raised as problem.

There could be also a need for self-assessment of farmers regarding IPM implementation and tools/plans for pesticide users to follow to support this. It was noted that the IPM requirements applied to all professional users, which may make implementation more difficult.

There are also important differences between crops and sectors regarding available non-chemical alternatives and decision support systems (DSS) as important prerequisites for IPM systems.

Demonstration farms have a key role in some MS (particular DE, DK, FR) and the different approaches generated much interest among MS. There is a need to discuss about organisational issues like funding, tasks, etc.

It seems a problem in many MS to keep stakeholders in particular environmental groups on board in the process of developing the NAP.

Coherence with other existing agriculture regulations, eg for soil protection and soil conservation, has to be considered and weighted.

[1] Main content in the native language can be made accessible with the Google translator.

**Synopsis of the presentations held in Berlin, June 5-6, 2012**

| MS | Actual situation, legal background | Quantitative and qualitative targets | Main areas of actions | Progress indicators incl. risk indicators | Public communication, stakeholder involvement | Problems, bottlenecks |
|---|---|---|---|---|---|---|
| AT | - nine regional action plans under preparation, i.e. nine different competent authorities<br>- federal regulation as basic frame, coordination by Ministry of Agriculture, Forestry, Environment and Water Management | - will be differ in regions<br>- not yet identified | - will be differ in regions<br>- not yet identified | - will be differ in regions<br>- not yet identified | - nationwide conference in 2010<br>- all stakeholders on regional level are invited to comment the draft<br>- regional websites planned | - coordination of nine action plans |
| BE | - the action plan is presently under construction at different levels (federal, regional and communities) | - no global targets but specific ones instead<br>- all targets are still provisional | - for the time being, there are about 37 actions at national level and about 30 actions at the Walloon region level<br>- main actions are directed on: certificate of knowledge, Intoxications monitoring, Controls, non-professional users, water protection, specific areas protection, handling of pesticides, IPM, observatory of pesticides<br>- water protection: buffer zones in north BE 1m along | - indicator SEQ for surface water in Flanders<br>- EU harmonised indicators when available<br>- other indicators: pressure, state or response indicators specific to each action of the action plan<br>- data for global indicator difficult to obtain and difficult to validate, therefore focus on simple and pragmatic indicators (eg TFI) until the regional conflicts are | - website with updated and balanced information, incl. FAQ document<br>- stakeholders council and public consultations | - harmonisation of the communication about the action plan<br>- respect of the timeline for notification of the action plan in November<br>- chronic intoxication survey (EU harmonised method?)<br>- availability of risk indicators |

| MS | Actual situation, legal background | Quantitative and qualitative targets | Main areas of actions | Progress indicators incl. risk indicators | Public communication, stakeholder involvement | Problems, bottlenecks |
|---|---|---|---|---|---|---|
| | | | all water courses but in special zones 6m, in specific areas buffer zones still under negotiation between regions<br>- in north BE herbicides are banned in cities<br>- IPM: development of specific guidelines and financial support<br>- certification of all users: renewing of license every 6 years based on attendance of additional training, efforts to register and reach all users<br>- consolidation of sales and use data | resolved | | |
| BG | - a working group (since May 2012) is elaborating the draft of the action plan<br>- initial training of users already exists | - risk reduction (in special areas: use reduction)<br>- reduction of exceeding of MRLs<br>- encourage IPM | - training<br>- inspection of sprayers<br>- information<br>- special measures to protect the aquatic environment<br>- use of biobeds<br>- IPM: advisor services for IPM, record keeping, etc.<br>- special programmes for special pests, sectors (eg organic farming) | - trend indicators available or planned, eg number of issued certificates, number of acute and chronic effects, number of new sprayers, increase of organic farming<br>- use of monitoring data, eg surface water | - stakeholder workshop in May 2012 (with support of OPERA)<br>- public participation via website | - ways to finance activities |
| CZ | - amendment of the | - reduce risk of use of | - human health with 4 subtar- | - development of useful indi- | - stakeholders contrib- | - practical implemen- |

| MS | Actual situation, legal background | Quantitative and qualitative targets | Main areas of actions | Progress indicators incl. risk indicators | Public communication, stakeholder involvement | Problems, bottlenecks |
|---|---|---|---|---|---|---|
| | plant health act is currently before the official publication in the Collection of Laws<br>- working group is preparing the action plan<br>- training of users and inspection of sprayers have been in force since 2004 | pesticides<br>- pesticide use optimization with maintenance of scope and quality of agriculture production<br>- 10% reduction of pesticide residues in plant commodities and food of plant origin produced in CZ until 2020 in comparison with reference period 2009-2010<br>- 15% reduction of pesticide residues in surface and groundwater until 2020 in comparison with reference period 2008-2010<br>- 10% reduction of pesticide residues in monitored reservoirs of drinking water & 10% increase of number of inhabitants supplied with „clean“ drinking water (without residues) until 2020 in comparison with reference period 2008-2010 | gets and 13 measures<br>- water protection with 6 subtargets and 15 measures<br>- protection of environment with 1 subtarget and 11 measures<br>- pesticide use optimization with 2 subtargets and 13 measures<br>- there are further 15 general measures fit for all areas and targets (eg advisory services, education, general public awareness etc.) | cators is one of the general targets/measures of the action plan<br>- after adoption of harmonized indicators, these will be implemented into CZ action plan | ute in the working group<br>- results of the working group are made publicly via internet for comments | tation of (obligatory) IPM<br>- efficient advisory field service for IPM<br>- coherence with existing agriculture rules (GAEC) for soil protection from erosion and relevant conservation treatment<br>- wide networking of advisors needed |

| MS | Actual situation, legal background | Quantitative and qualitative targets | Main areas of actions | Progress indicators incl. risk indicators | Public communication, stakeholder involvement | Problems, bottlenecks |
|---|---|---|---|---|---|---|
| DE | - first action plan in 2004<br>- revising the action plan in 2008 (English version available under homepage of the action plan) | - reduction the risks associated with the application of pesticides by 25 % until 2020<br>- reduction of the application intensity of pesticides (necessary amount)<br>- reduction of domestic and imported food and feed products exceeding the existing MRLs (< 1%) | - necessary minimum (surveys, reference farms, Treatment Index)<br>- hot-spot-management<br>- research and promotion of innovation towards IPM (eg demonstration farms)<br>- improving knowledge of users and the retail sector, improved plant protection advice (web-based DSS, training the trainers)<br>- improving plant protection equipment (reduced buffer zones with drift reducing nozzles)<br>- internet portal<br>- national compliance programme | - risk indicator “Synops” (based on OECD-Indicators)<br>- use and sales data to calculate use intensity with the treatment index<br>- network of reference farms<br>- monitoring data<br>- long-term field studies | - stakeholder conference 2009 (guidance)<br>- forum meetings and expert groups (environment, health, indicators, residues)<br>- agreement of federal Government and Länder<br>- final stakeholder and public involvement | - involvement of environmental groups<br>- funding of additional extension services (eg for IPM guidelines)<br>- reference period for impact indicators |
| DK | - long history with action plans since 1986<br>- revision of the current plan in order to develop a new plan for 2013-2017<br>- new pesticide tax system based on toxicity | - PLI reduction at least about 40% compared to 2010<br>- balanced information about MRLs for consumers<br>- reduction in exceeding of MRLs<br>- preventing pesticides from leaking into the groundwater | In the present or future action plan:<br>- protection of groundwater<br>- control initiatives<br>- sprayer inspection<br>- distributer training<br>- fixed buffer zones<br>- IPM measures eg further IPM training/education<br>- further information to the public | - new indicator: Pesticide Load Indicator (PLI) for human health, environmental fate, environmental toxicity<br>- statistics on pesticide sales and use data in several sectors | - workshops with all stakeholders<br>- public hearings during summer 2012<br>- information via website | - incentives for farmers to follow IPM<br>- measure of adequate IPM implementation<br>- secure appropriate use of pesticides (eg use of personal protective equipment)<br>- lack of interest in obtaining authorization of low risk prod- |

| MS | Actual situation, legal background | Quantitative and qualitative targets | Main areas of actions | Progress indicators incl. risk indicators | Public communication, stakeholder involvement | Problems, bottlenecks |
|---|---|---|---|---|---|---|
| | - action plan will be financed by the pesticide tax | - and many others | - research and development | | | ucts |
| EE | - legal base for the action plan available | - risk reduction<br>- awareness raising and training as a baseline for risk reduction | - draft action plan available with 7 chapters: eg training, advice, awareness raising, equipment, IPM<br>- each chapter analysis the state of the art<br>- draft action plan includes its implementation plan where each action confers to actors, time frame, costs and source of finance<br>- it is foreseen that indicators will be described in implementation plan | - social, environmental and economic indicators are planned | - public consultation process in place<br>- cross-sector ministry consultation | - implementation of IPM<br>- how to communicate risk and risk reduction<br>- how to keep stakeholders on board<br>- balanced information for the public<br>- how to train the trainer |
| FI | - working group incl. stakeholders started in 2009 and took 2 years to develop the action plan<br>- new plant protection act since 2011 where many requirements of the SUD are fulfilled, eg training, aerial | - no quantitative targets<br>- in general reduce dependency on pesticides and risks, raise awareness, promote IPM | - involvement of stakeholders<br>- establishment of training system, i.e. for users, advisors, distributers and trainers<br>- inspection of equipment in use, incl. status quo analysis of sprayers in use<br>- promote IPM, incl. research, training<br>- buffer zones up to 25 m depending on the product | - an old risk indicator based on sale figures available but no resources to update or to develop a new one<br>- lack of pesticides use data (data due in 2015) | - public communication is under progress<br>- stakeholder involvement | - no quantitative targets<br>- lack of use data<br>- lack of indicators |

| MS | Actual situation, legal background | Quantitative and qualitative targets | Main areas of actions | Progress indicators incl. risk indicators | Public communication, stakeholder involvement | Problems, bottlenecks |
|---|---|---|---|---|---|---|
| | spraying<br>- NAP available in English (cf. presentation) | | and a new risk-based buffer zone system under development | | | |
| FR | - action plan already implemented named ècophyto2018 since 2009<br>- interim evaluations expected in 2012 and 2018 | - main target: reduce by 50% the use of pesticides between 2008 and 2018 if possible<br>- biocontrol identified as priority within the action plan | - there are 114 actions with 9 axis: (1) monitoring uses, risks and impacts on various scales, (2) diffusing good practices and innovative farming systems, (3) research, experiments, (4) training of users, distributers, advisors, (5) developing and organizing monitoring of harmful organisms in order to use just the exact needed quantity of pesticides, (6) developing specific action for over-sea territories, (7) reducing pesticide use in non-agricultural area, (8) implementing a governance at the national and local level, and communication plan to all targets, (9) reinforcing health and safety for professional users<br>- "BIOcontrol roadmap" to encourage farmers to use biological control methods, | - indicator NODU (*nombre de doses unité*): monitoring of the intensity of the use of pesticides (similar to the use of TFI in DK and DE)<br>- focus on toxic and ecotoxic active substances | - ècophyto2018 is a plan built on the basis of a committee composed of the representatives of all the stakeholders<br>- National Steering Committee (CNOS): chaired by the Minister of Food, Agriculture and Fisheries gathering the administrations concerned and the stakeholders following the operational and financial implementation of the plan<br>- Experts Committee: gathering stakeholders experts, supporting the CNOS for implementing each action, reviewing the different point of views, studying the opinions of the expert committees and submitting its proposals to | - adaption of the action plan to regional conditions<br>- involvement of stakeholders from food industry<br>- farm networks<br>- development of communication campaign<br>- introduction of non local macro-organisms for plant health |

| MS | Actual situation, legal background | Quantitative and qualitative targets | Main areas of actions | Progress indicators incl. risk indicators | Public communication, stakeholder involvement | Problems, bottlenecks |
|---|---|---|---|---|---|---|
| | | | research, new regulation etc.<br>- buffer zone reduction possible based on models and substitution of pesticides | | the CNOS and to the project leader<br>- establishment of different working groups, eg for demonstration farms, research, indicators<br>- ÉcophytoPIC, the IPM portal, expected in autumn 2012 | |
| LT | - new Plant Protection Act was adopted in Parliament on 22 May 2012<br>- the activities with regard to prepare national action plan started in 2009<br>- now the action plan is in project stage at the Ministry of Agriculture | - indirect qualitative targets more based on achievements of single measures<br>- no specific target, i.e. general plan overall risk reduction | - the main priorities are: integrated pest management, training, handling and storage of pesticides, pesticide application equipment, information to the public, and developing indicators<br>- independent advice as key requirement for IPM implementation | - environmental Indicators, eg increase number of certified sprayers, use of biobeds, farms implementing IPM programs, sprayers fitted with drift reduction nozzles, sprayers sold with devices to minimize drift<br>- economic Indicators, eg increase the precise application equipment, increase of pesticides for minor use, increase of biological control products<br>- social Indicators, eg residues monitoring in production, skills test for operators and increase of number certificates issued, increase of number of pesticide op- | - conference in 2009 with stakeholders | - further IPM specific advice systems<br>- research funding<br>- new varieties, thresholds, monitoring systems<br>- independent advice<br>- IPM specific advice system<br>- knowledge evolution of independent advisors<br>- accreditation of advisors<br>- social/public consultation<br>- lack of non-chemical alternatives in many crops to implement IPM |

| MS | Actual situation, legal background | Quantitative and qualitative targets | Main areas of actions | Progress indicators incl. risk indicators | Public communication, stakeholder involvement | Problems, bottlenecks |
|---|---|---|---|---|---|---|
| | | | | erators who use personal protective equipment | | |
| LV | - plant protection act amendments in 2011<br>- distribution and use of pesticides, inspection of equipment in use, training for users, distributors and advisors, aerial spraying are regulated by act<br>- on September 2007 State Plant Protection Service, SPPS (Ministry of Agriculture) initiated work on the national strategy for good agriculture practice and IPM system establishment in 2008-2013<br>- draft of the action plan will be finalised end of June 2012 | - risk reduction | - not yet specified<br>- IPM: plans to start developing crop specific guidelines with grower associations | - indicators directly related to the use of pesticides are not available<br>- since 2009 environmental indicators (eg farmland birds index, small mammal species index, water quality etc) are available<br>- monitoring data of the environmental load of pesticides are available (water monitoring, MRLs etc)<br>- EU harminised risk indicators will be used if available | | - Indicators: lack of pesticide use data<br>- Inspection of equipment: risk assessment for setting different time tables and intervals, exemptions from inspection |

| MS | Actual situation, legal background | Quantitative and qualitative targets | Main areas of actions | Progress indicators incl. risk indicators | Public communication, stakeholder involvement | Problems, bottlenecks |
|---|---|---|---|---|---|---|
| PL | - new plant protection act is coming soon<br>- action plan is being prepared by the Ministry of Agriculture and Rural Development in cooperation with other ministries<br>- integrated production systems have been implemented for years | - targets are expected for administration concerning plant protection products related risk reduction and implementation of IPM<br>- targets will not impose directly obligations on farmers, entrepreneurs and citizens | - preparation of IPM crop specific guidelines<br>- spread of knowledge about IPM – trainings for advisors, farmers<br>- preparation of web-site dedicated to IPM<br>- making decision support systems in plant protection accessible for farmers<br>- promotion and further development of Integrated Production System<br>- revision of existing training system in plant protection<br>- revision of existing system of sprayer inspections<br>- development of the system of gathering and analyzing data about plant protection, eg poisoning incidents (humans, bees)<br>- improvement of efficiency of controls connected with sales and use of pesticides | - indicators for the action plan: (1) percentage of plant origin food samples with pesticide residues exceeding MRL, (2) percentage of animal origin food samples with pesticide residues exceeding MRL, (3) knowledge about IPM principles among farmers<br>- indicators for particular tasks/actions of the action plan<br>- available indicators: (a) level of pesticide residues in food of plant and animal origin, (b) level of pesticide residues in aquatic environment, (c) level of pesticide residues in drinking water, (d) number of law infringement incidences, (e) statistic on use and trade of plant protection products, (f) percentage of pesticide users, advi- | - consultations with 107 stakeholders, eg NGOs, research institutes<br>- the draft of the action plan is available on the website | - limited financial resources<br>- numbers of farmers in PL |

| MS | Actual situation, legal background | Quantitative and qualitative targets | Main areas of actions | Progress indicators incl. risk indicators | Public communication, stakeholder involvement | Problems, bottlenecks |
|---|---|---|---|---|---|---|
| | | | | sors and distributors trained, (g) percentage of application equipment inspected | | |
| SE | - long history with action plans since 1986<br>- revising of the current plan since 2008 | - not yet identified<br>- in current plan there are targets of risk reduction concerning health and environment, no presence of residues in water, low levels of residues in domestic vegetable crops, little risk for users of PPP and all growers shall apply IPM or organic farming in 2014 | - IPM measures<br>- mandatory training for all professional users<br>- more actions will be identified in the next few months | - probably the already used PRI-nation for health and environment | - hearing during summer 2012 with stakeholders<br>- information via website<br>- seminars during fields days in summer 2012<br>- public web survey in spring 2012 executed | - measure of IPM implementation<br>- authorization of low risk products<br>- information to the non-professional users<br>- lack of advisers |
| UK | - first action plan in 2006 (environment)<br>- revised the action plan in 2008, mainly adding human health issues<br>- long history of non-Government activities, eg Voluntary Initiative, | - new plan being developed<br>- risk reduction as key target<br>- no high level quantitative targets in previous plans but some detailed targets<br>- previously had 6 different action plans: human health, water, | - Regulatory measures (legislation and policy)<br>- Non-regulatory measures: incentives<br>- and industry approaches; R&D and knowledge transfer<br>- | - human health: eg PIAP investigation, MRL compliance<br>- water: eg pesticide pollution incidents, levels of pesticides in water;<br>- biodiversity: eg wildlife poisoning cases, farmland bird indicator, field margin management<br>- amenity use: data difficult | - long-standing pesticide forum with short life working groups set up as required, permanent liaison groups (grower, amenity, amateur)<br>- public consultations on previous plans and on policy on implementing SUD | - need to be careful not to spend too long developing plans – don't get stuck on detailed wording<br>- number of indicators; burdens of data collection<br>- extent of stakeholder burden through meetings etc |

| MS | Actual situation, legal background | Quantitative and qualitative targets | Main areas of actions | Progress indicators incl. risk indicators | Public communication, stakeholder involvement | Problems, bottlenecks |
|---|---|---|---|---|---|---|
| | LEAF, BASIS training, Crop Assurance Schemes<br>- range of available incentives: cross-compliance measures, government agri-environment schemes, industry assurance schemes | biodiversity, amateur use, amenity use, availability. | | to obtain therefore specific surveys are done<br>- trend indicators: eg bio-pesticide availability, sprayer testing, training of users, cross-compliance checking, crop protection management plans, product sales, cropped areas | | - difficulty of applying IPM in the same way across all pesticide users needs different approaches according to sectors (eg farmer could do self assessment in implementing IPM) |