UP-DATING ON INTEGRATED PEST MANAGEMENT IN POLAND

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INTEGRATED PEST MANAGEMENT (IPM) - a farmer's knowledge and use of an optimal mix of pest control techniques and tools, taking into account a variety of other factors as: yield, profits, risk, sustainability and safety for consumers, farmers and environment.

INTERNATIONAL EXPERIENCE IN A WIDE IMPLEMENTATION OF IPM

- A FARMER should be the focal point in a wide implementation of the pro-ecological methods of plant protection;
- Confirmed in the UE Directive 2009/128/EC.

CRITICAL EVALUATION OF IPM DEVELOPMENT AND IMPLEMENTATION IN POLAND

- activities at the upstream level;
- research level;
- farmers' field level and
- downstream level or consumer level.

THE UPSTREAM LEVEL – GOVERNMENT LEVEL

All new member states (NMS) have adopted international reference rules on pesticides as: International Plant Protection Convention; Codex alimentantarius and International Code of Conduct for the distribution and use of pesticides; the recent European Commission regulations on pesticide registration and presently adopting the directive of the European Parliament and of the Council establishing a framework for Community action to achieve a sustainable use of pesticides.

RESEARCH LEVEL

Based on manuals produced by IOBC, researchers in Poland have adopted the IPM recommendations for integrated crop and pest management (ICPM) to the country ecological and social conditions:

- fruit production
- vegetable crops grown under cover
- vegetable crops grown under field conditions.

Only recently they developed recommendations for agriculture crops.

THE FARMER'S FIELD LEVEL

•In spite of the Government & researchers involvement implementation of ICPM has faced serious constraints;

• A close co-operation between researchers – private distributors of natural enemies – farmers has resulted in a wide implementation of biological control on vegetables grown under cover.

THE DOWNSTREAM LEVEL: MARKETING AND CONSUMERS' DEMAND

- The requirements for high quality vegetables and fruits with low (or „0") level of pesticide residues demanded by some processing industry have forced farmers to implement ICPM.
- There are needs for the government's and NGOs involvement for grated public awareness for quality producets and introduction of labeling to force farmers onto ICPM, confirmed by certification.

AGRICULTURAL KNOWLEDGE AND INFORMATION SYSTEM

1. Stakeholders involvement:
   - Government institutions
   - State and private extension
   - Farmers' organizations
2. Farmer's attitudes, experience and practices related to IPM
   - The implementation of new crop and pest management (ICPM) programs should be based on our knowledge of farmer's perception of pest problem, the pest control decision – making process and the likehood of the adoption of new technologies and techniques (Wearing 1988)

BUILDING THE NETWORK ON INTEGRATED FRUIT PRODUCTION (IFP) IN POLAND

- initiative of Prof. Edward Niemczyk and his colleagues from the Research Institute of Pomology and Floriculture (Skierniewice) since 1991;
- the IFP recommendations for apple were based on principles of the IOBC/WPRS commission on "IP – Guidelines and Endorsements";
- starting building IFP "from the bottom on the farm level";
- involvement of the IFP groups; assistance from devoted state extension staff.

INTEGRATED FRUIT PRODUCTION: 1991 – 2004

- more that 1 000 apple growers organised in IFP groups;
- 7 300 ha - total area under IFP – apples;
- 625 growers obtained certificates for 100 000 tons of apples (13% of total table apple production in Poland);
- 1995 – establishment of the first farmer groups on IFP – strawberries;
- 1999 – preparation of IFP guidelines for sour cherries.



EVOLUTION FROM THE INTEGRATED PEST CONTROL (ICP) TO IPM ON OTHER CROPS

- from a single pest species ICP to the production system approach,
- active participation of the Polish scientists in the IOBC/WPRS working groups;
- preparation of IPM as a base of Integrated Production (IP) for vegetables grown under cover and field conditions, later for major field crops by researchers of agriculture research institutions and agricultural universities;
- involvement of the first private companies in the IPM (IP) implementation by farmers in Poland.

IMPLEMENTATION OF IPM BASED ON BIOLOGICAL CONTROL IN GREENHOUSES

•basic and applied research by Institute of Plant Protection (Poznań), Warsaw University of Life Sciences and Research Institute of Vegetable Crops (Skierniewice);

•SIGNIFICANT contribution of the private companies distributing natural enemies and providing know-how on ICPM for tomato and cucumber grown under cover in the middle of 1990-ties;

•wide implementation by all large and approx. 50% of smaller greenhouse estates.

DECISION SUPPORT SYSTEM FOR INTEGRATED TOMATO PRODUCTION IN GREENHOUSES IN POLAND

- interdisciplinary team - RIVC and entomologists - SGGW;
- assistance of the computer private company;
- the FAO grant to finalize the system operation on the RIVC website;
- Jan. – June 2011 – total no. visits – **73 089**; max. monthly (June) – **32 424**, av. **12 181** (RIVC, 2011).

DEMANDS FOR QUALITY PRODUCTS BY FOOD PROCESSING INDUSTRY

- Alima Gerber (Rzeszów) and Nutricia Ovita (Opole) for field vegetables;
- Available blocks of ICPM provided by Research Institute of Vegetabkle Crops and the interdisciplinary team from the Cracow Agricultural University under PHARE (1995) programme.

INSTITUTIONALIZATION OF IPM IN POLAND

- the decree of the Minister of Agriculture and Rural Development dated 26 July 2004 based on the Parliament bill on Plant Protection (2003);
- specification of the requirements for farmer's training, scientific background of recommendations and control procedures by the authorised institutions, especially by the State Plant Protection and Seed Inspection Service.

PARAMETERS USED IN THE EVALUATION OF IPM PROGRAMS:

- Crops, regions with obvious high pesticide usage – the objective to reduce the level from „technological optimum” to „social optimum”: frequency of treatments and NOT weight of pesticide per ha as a proper criterion.
- Crops, regions with low pesticide usage – the objective is yield increase in regard to quality and quantity, however avoiding pesticide dependency as a precondition for this sustainable intensification of agriculture/horticulture production systems.

SUCCESSFUL ICPM PROGRAMMES NEED TO BE AWARE OF FARMERS' OPINIONS.

1. It is important to understand farmers' perceptions of the pest problems and current practices of pest control as a pre-requisite to developing appriopriate ICPM.

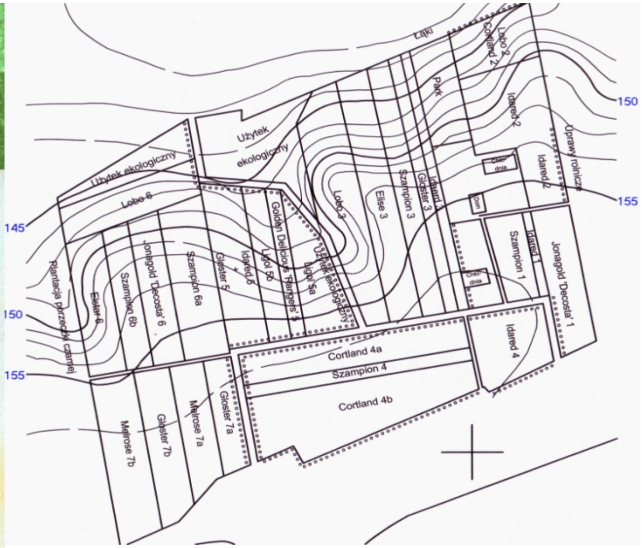
2. Socio-economic research is needed to assess the acceptability and applicability of ICMP recommendations. Through appriopriate feedback, the programme can respond successfully.

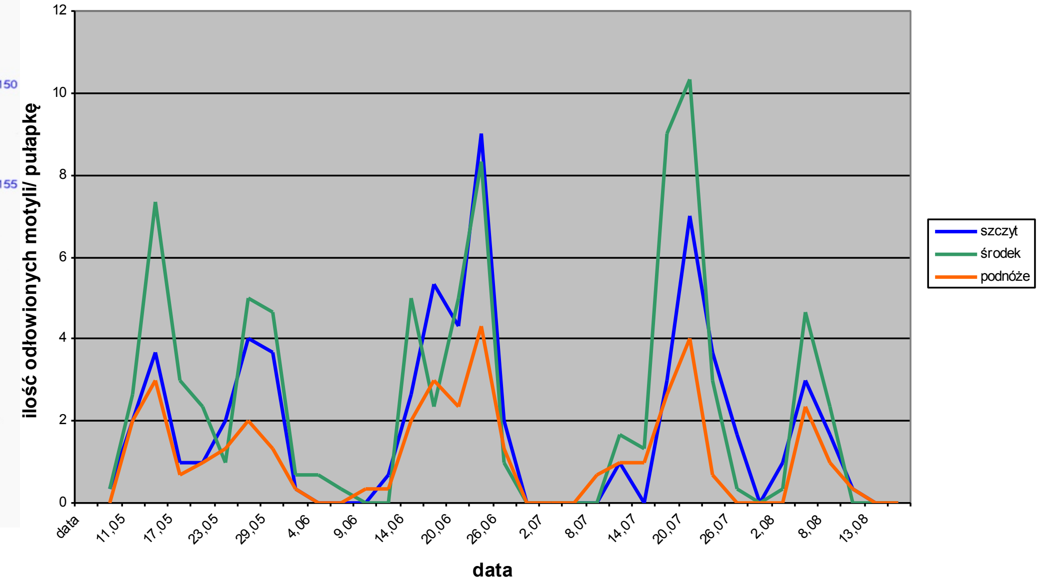
3. Carrying out classical surveys on: farmers' knowledge, attitude and current plant production and protection practices:

- approx. 850 questionnaires between 2002 – 2011;
- majority on IFP apple, sour cherry, strawberry, black currant;
- approx. 150 on arable crops;
- 65 on field vegetables.

EFECT OF ORCHARD LOCATION ON A SLOPE ON THE CODDLING MOTH MONITORING EFFICACY BY PHEROMONE TRAPS

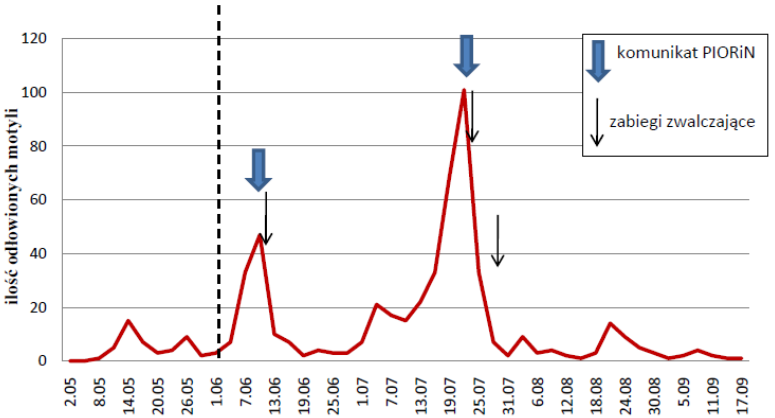
- available regional forecasting information for selected pest and diseases on the webside of the State Plan Protection and Seed Inspection Service;
- approx. **300 000** visits annually (1 mln sice the start) (K. Balkiewicz 2011)
- Effect of orchard location on a slope on the codling moth monitoring efficacy by pheromone traps.



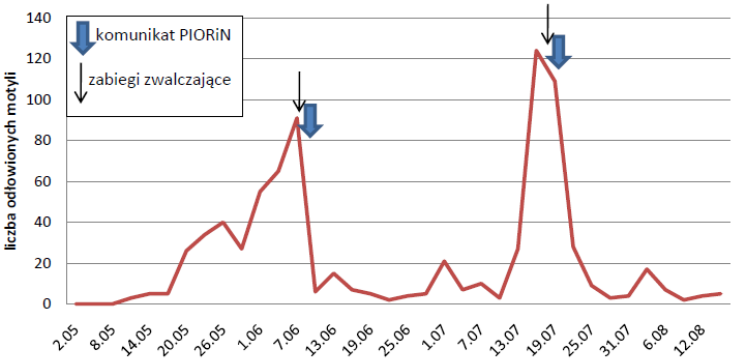


THE IMPORTANCE OF HAVING A LOCAL MONITORING SYSTEM

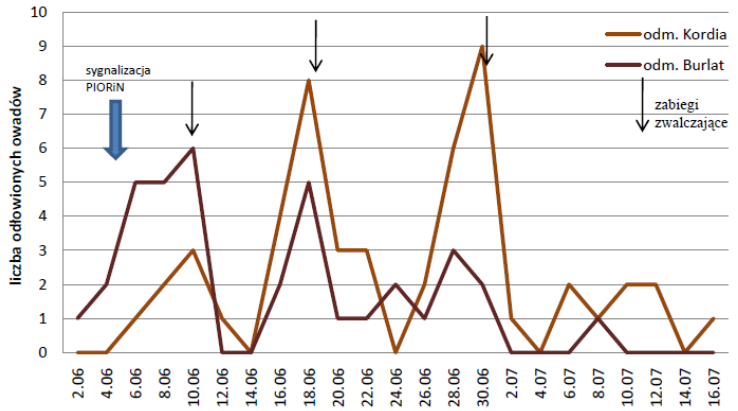
codling moth



plum moth



cherry fruit fly

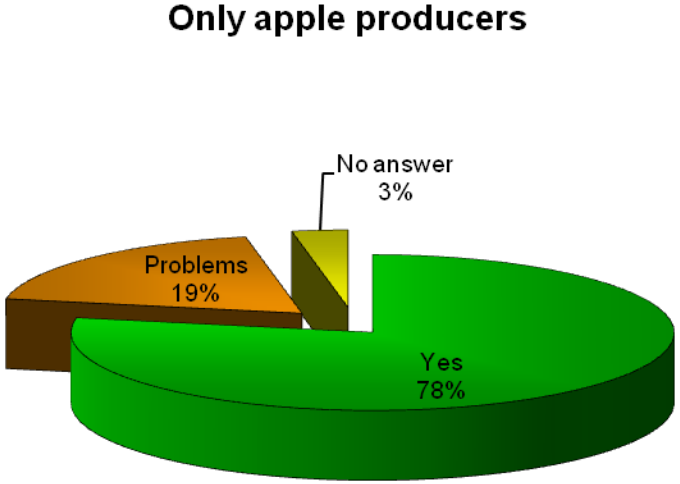


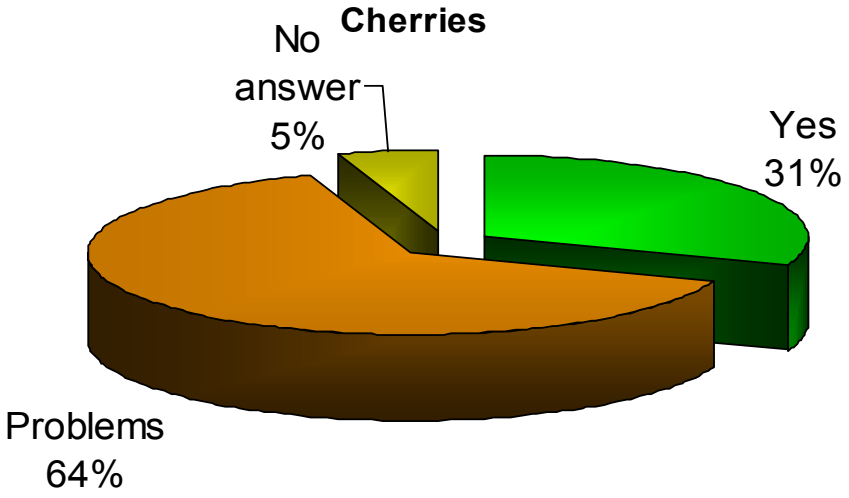
(R. Okraska, 2010)

REGULAR MONITORING CARRIED OUT BY THE IFP COURSE PARTICIPANTS

	The IFP participants	No IFP courses
Black currants	90%	96%
Cherries	100%	72%
Strawberries	100%	89%
Apples	97%	60%

PRACTICAL IMPLEMENTATION OF ECONOMIC THRESHOLDS BY FRUIT GROWERS



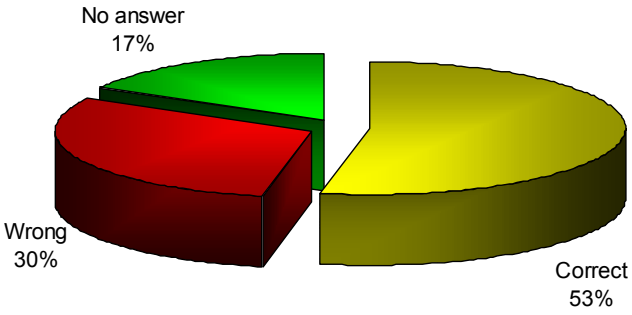


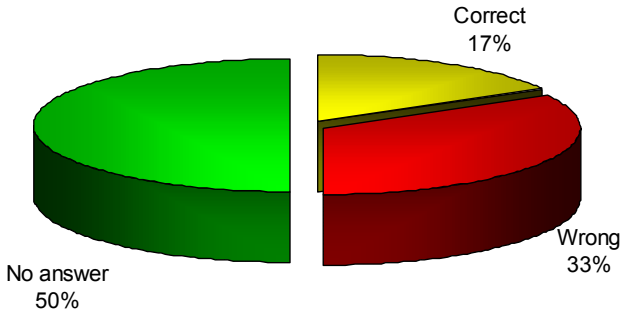
KNOWLEDGE OF THE IMPORTANCE OF ECONOMIC THRESHOLDS IN INTEGRATED CROP AND PEST MANAGEMENT

The IFP participants

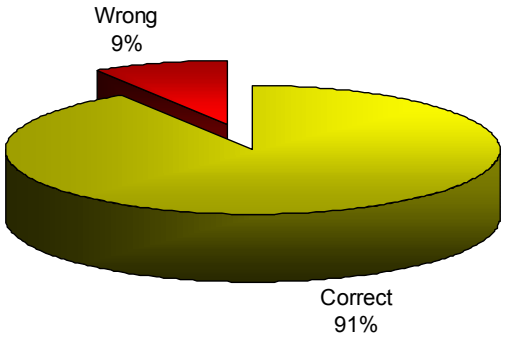
No-IFP courses

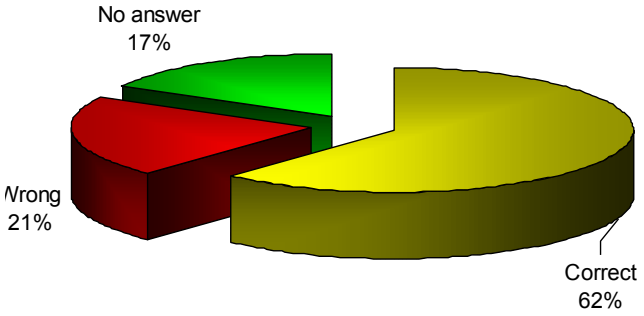
Strawberries





Black currants





PRO-ECOLOGICAL APPROACH IN SELECTION OF A PESTICIDE

Order of choice of pesticides by apple producers interviewed:

Efficacy - Price - Ecological aspects: selectivity, low toxicity for mammals and natural enemies

Criteria	*Efficacy*	*Price*	*Ecological consideration*
1st	81%	34%	34%
2nd	13%	44%	33%
3rd	6%	16%	25%

QUALITY OF EXTENSION AND TRAINING

- quality of trainers in ICPM;
- theoretical versus practical training;
- extension materials,
- access to the decision supporting systems on ICPM: existing for Tomato grown under cover developed by RIVC and WULS-SGGW in 2006.

THE NATIONAL PROGRAMME ON RURAL DEVELOPEMNT for 2007-2013

- describes in details benefits of IPM for sustainable agriculture;
- BUT limited financial contribution to selected activities, being a part of IPM approach (cost of: training, pheromone traps, pesticide residues analysis);
- disproportionate part of subsidy was allocated to the ecological (organic) production;
- Integrated Production base on IPM provides environmental and economic sustainability to farmers' community.

MARKETING OF ICPM PRODUCTS ???

- IP certificate versus GLOBALGAP certificate;
- involvement of wholesale markets, supermarkets;
- customers' demand ???

FreshMazovia.com – Advisory services as the example

- approx. 600 farms in 2010, approx. 1000 in 2011 on IP
- more than 1000 farms for GLOBALGAP certificate
- 100 farms for TESCO NATURE certificate (M. Majewski, 2011).

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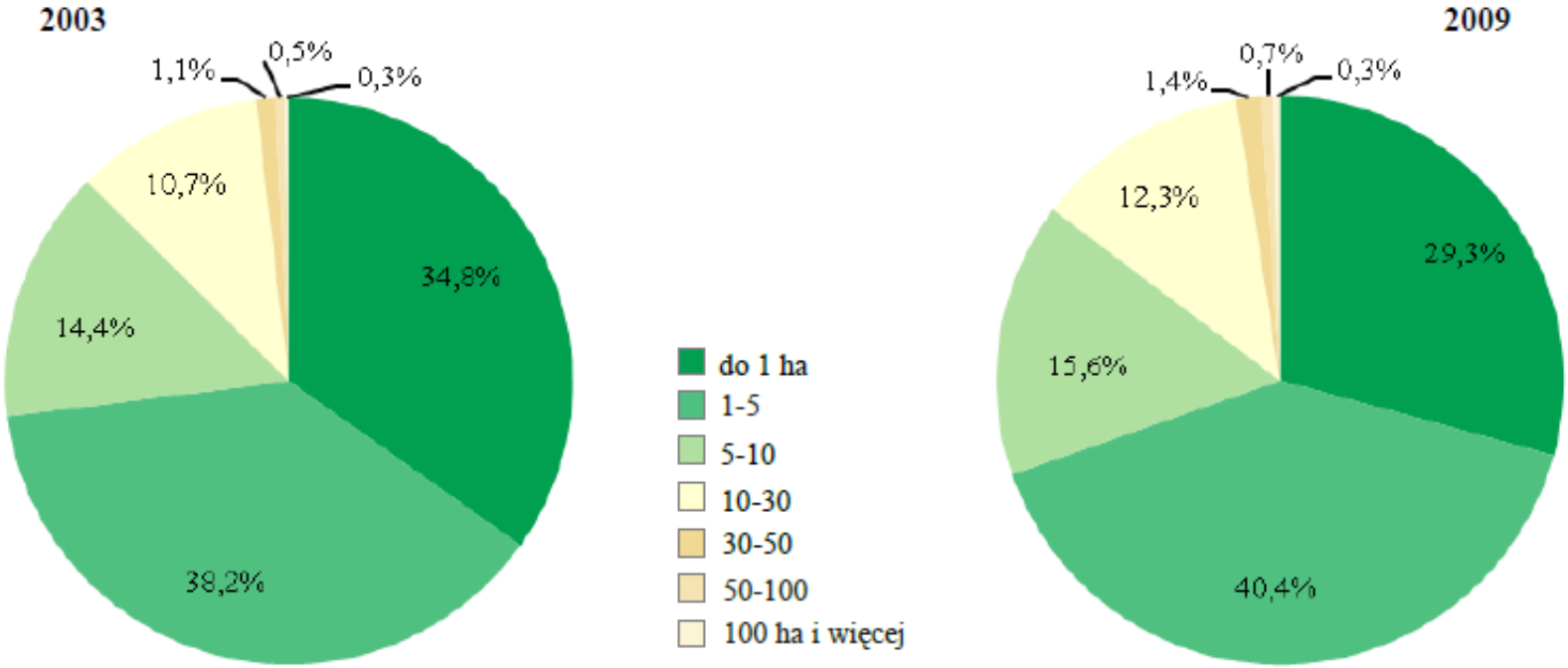
Usługi doradcze dla rolnictwa

THE EU DIRECTIVE 2009/128/EC IMPLEMENTATION

- development and activity in training farmers in Euro- and GlobalGap and ICPM by the newly established provide extension and consulting firms may support the governmental institutions in the specialized training of farmers and contribute to meeting conditions of the UE Directive on sustainable pesticide usage and IPM implementation in Poland.

FACTORS WHICH SHOULD BE CONSIDER IN A WIDE IMPLEMENTATION OF ICPM IN POLAND (1)

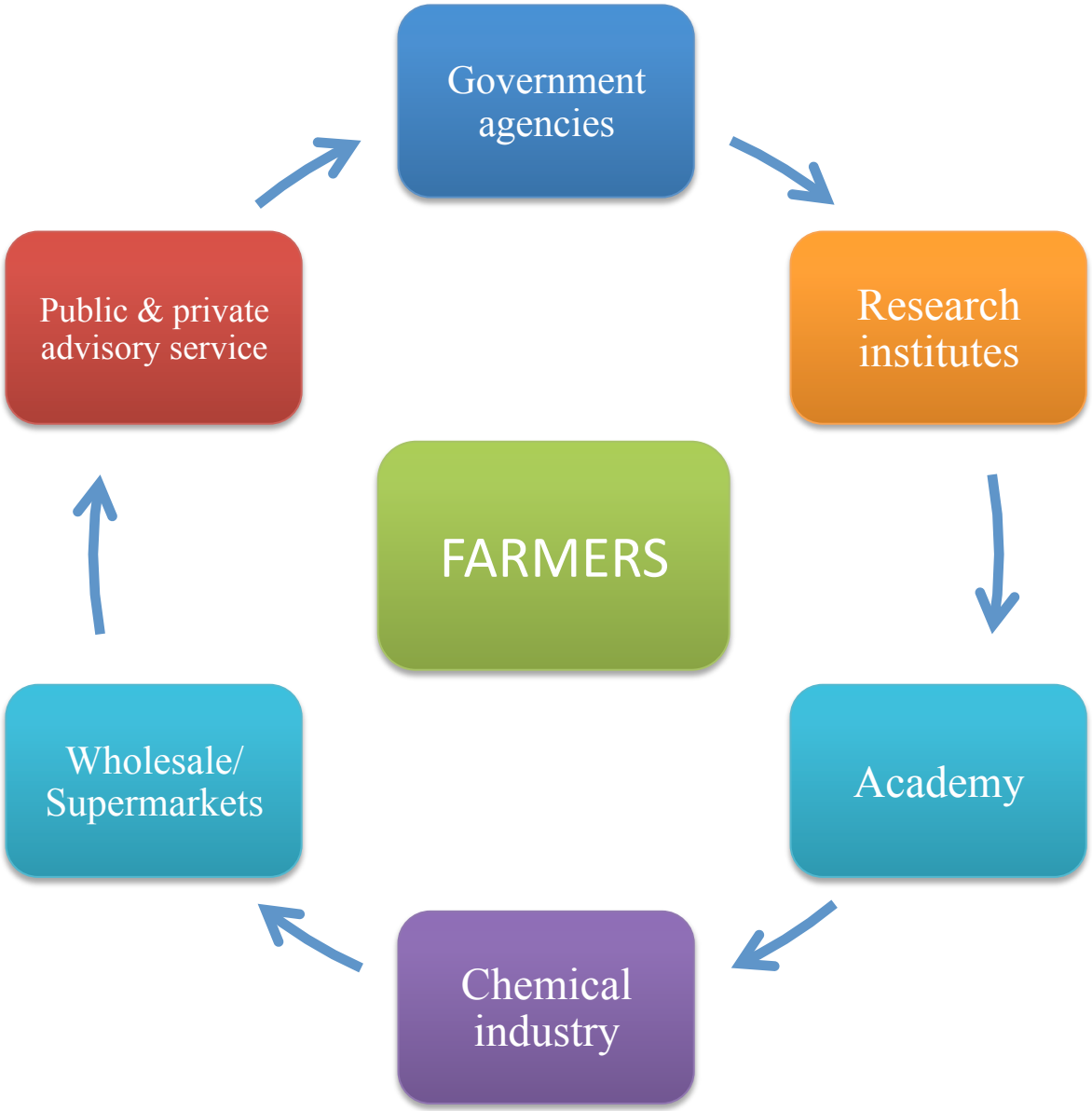
- specificity of farmers' community – 2.5 mln farms;
- agrarian structure – nearly 70% farms to 5 ha area.



FACTORS WHICH SHOULD BE CONSIDER IN A WIDE IMPLEMENTATION OF ICPM IN POLAND (2)

- farmers must have the appropriate incentives, relevant knowledge, and practical techniques to make use of alternative-based approaches;
- farmers need to accept a practice that is usually more management-and labour intensive that the conventional use of pesticides;
- farmers will need to see a demonstrable economic payment.

THE IPM WIDE IMPLEMENTATION THROUGHOUT CO-OPERTATION



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