



IPM on top fruits in Italy: state of the art and outlook

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The dawn of IPM in Italy

- **1962: first lecture by Prof. M. M. Principi (Bologna University) on “ I metodi di controllo integrato nella difesa delle piante coltivate dagli attacchi degli artropodi”**
- 1963-1972: entomological researches and investigations aimed to study the behavior of the most important species of pests and beneficial insects and to assess their response to different control techniques. The funding in this period was mainly delivered by Agricultural Ministry and some of its Research Institutions.

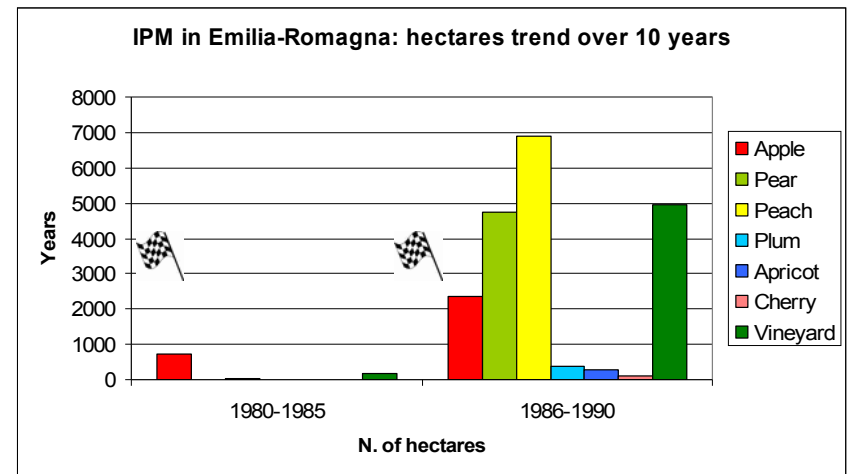
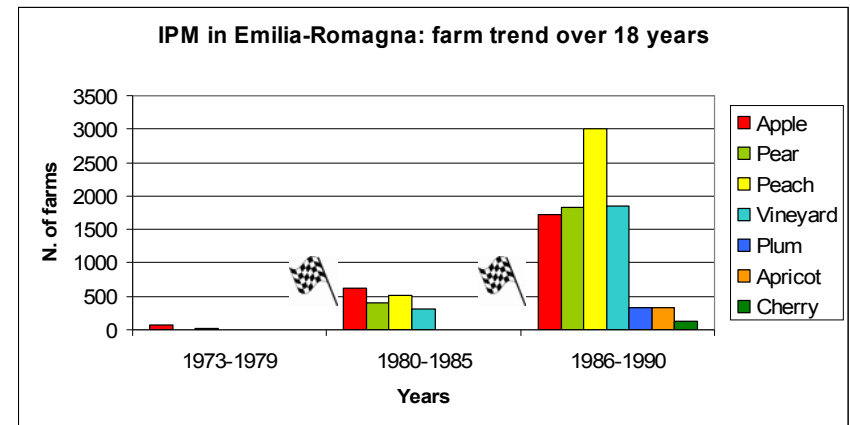


Principi M. M. (1962). I metodi di controllo integrato nella difesa delle piante coltivate dagli attacchi degli artropodi. "Atti Accad. Economico-Agraria Georgofili", 9, sez. 7:21 pp.

First experiences of IPM implementation

(the Emilia Romagna example)

- IPM in Italy was **officially born** as a demonstrative project in **1973** in Emilia Romagna
- First on apple (**10 farms, 7.1 ha**), then on pear, peach and further on other fruits and vineyard
- The activities were **funded** by **Region Emilia Romagna**
- The **University of Bologna and Piacenza** were involved in this activities **since the beginning**



Ovronnaz meeting (1976)

At the same time In Europe many other Countries were involved in the same topics and many cooperations started since 1976

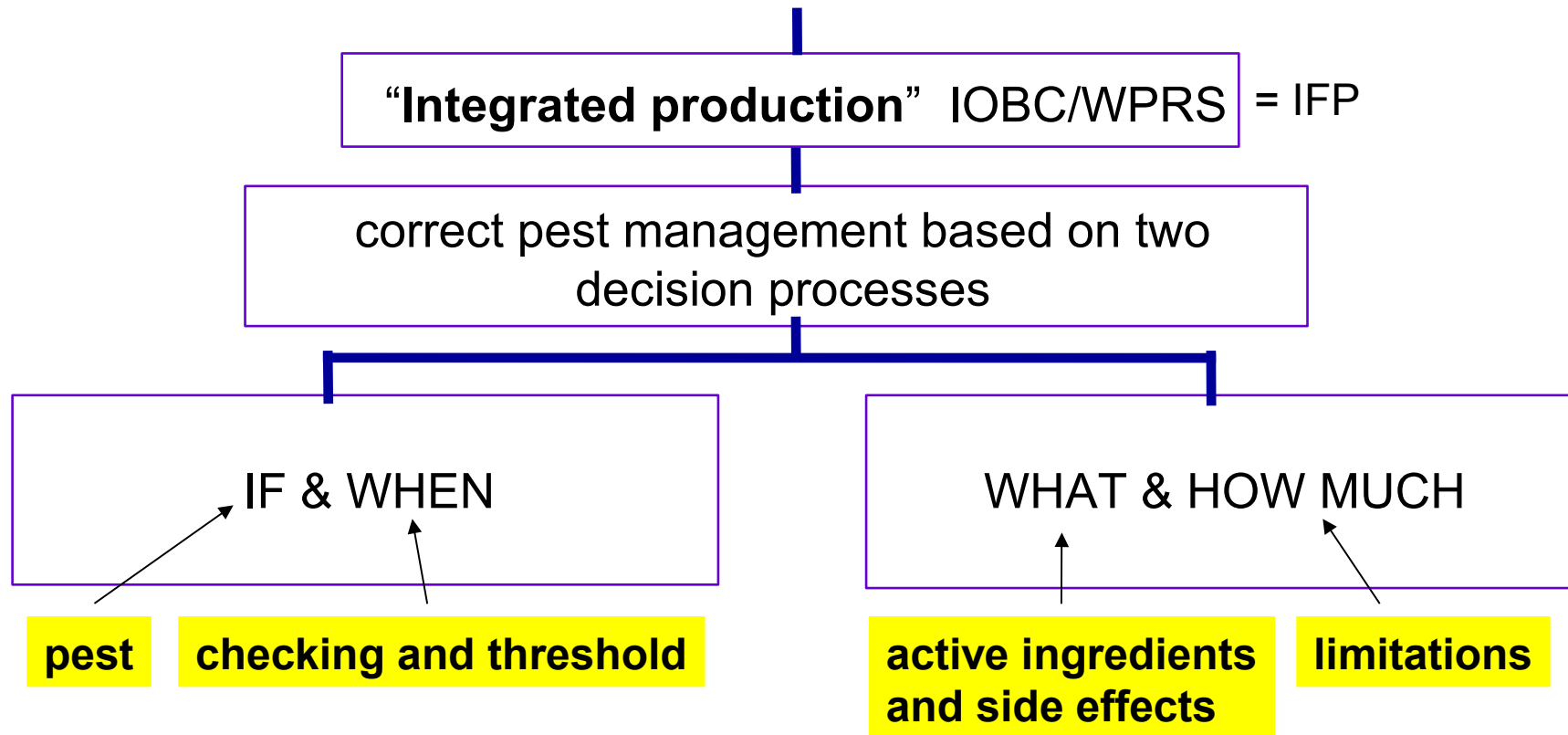


9-11 July 1976

Ovronnaz meeting (1976): G. Altner; H. Steiner, G. Celli; F. Schneider, M. Baggiolini (Boller et al, 2009)

IPM: principles & criteria

economical production of high quality fruit, giving priority to ecologically safer methods, minimizing the undesirable side effects and use of agrochemicals, to enhance the safeguards to the environment and human health.

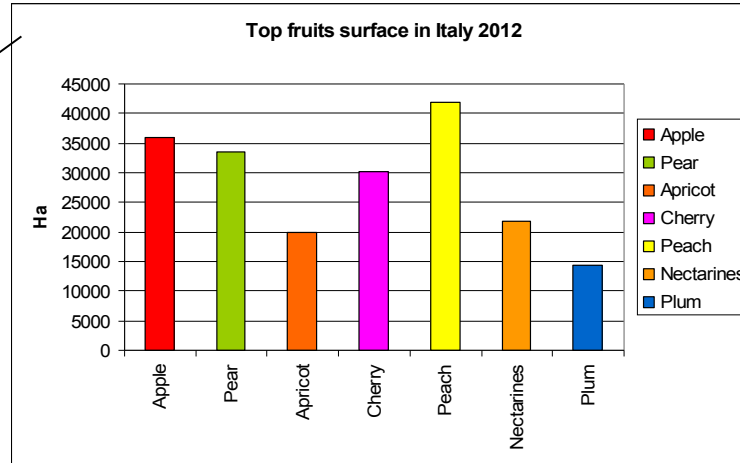


After Ovronnaz 1976

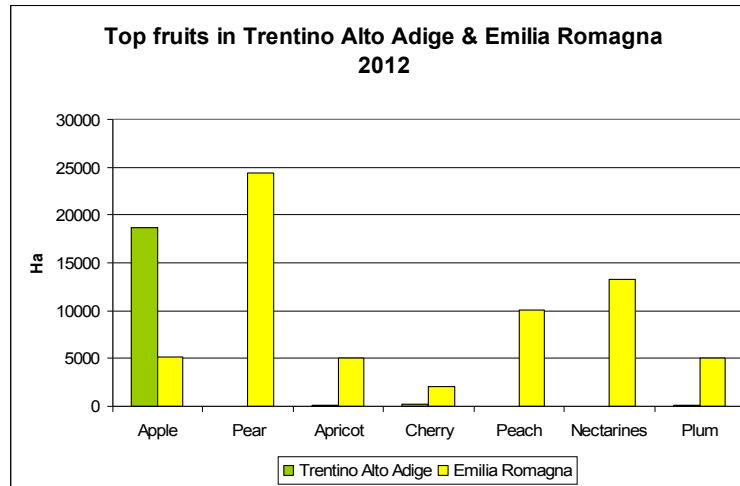
- Message of Ovronnaz: corner stone of the modern Integrated Production
 - The need to abandon the isolated view of plant protection and to place it in the context of the entire farm
- In the period 1980-1991 the Italian regions of ER, Trentino and South Tyrol were among the pioneer experiences in EU



Some national data



Many top fruits are cultivated in Italy. Pome fruits are present mainly in the North, while the stone fruits in the Center and South of Italy



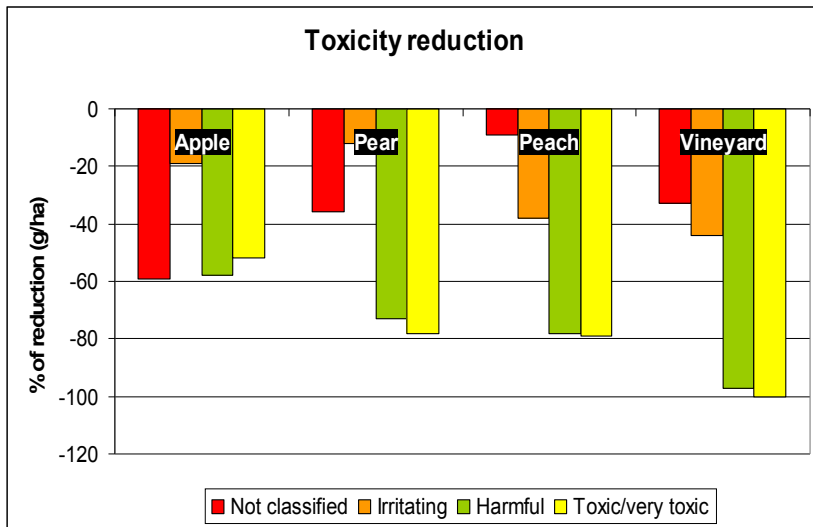
Trentino Alto Adige is a very specialized Region in apple and grape growing, while in Emilia Romagna practically all top fruits are present.

Some recent IPM results in Italy

(early 2000)

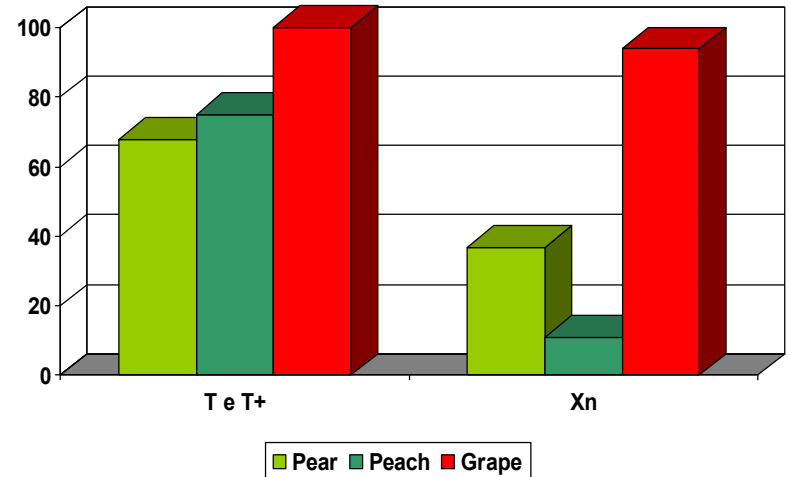
Number of treatments:

Saving in % in comparison to conventional control



Toxicity of pesticides:

Saving in % in comparison to conventional control



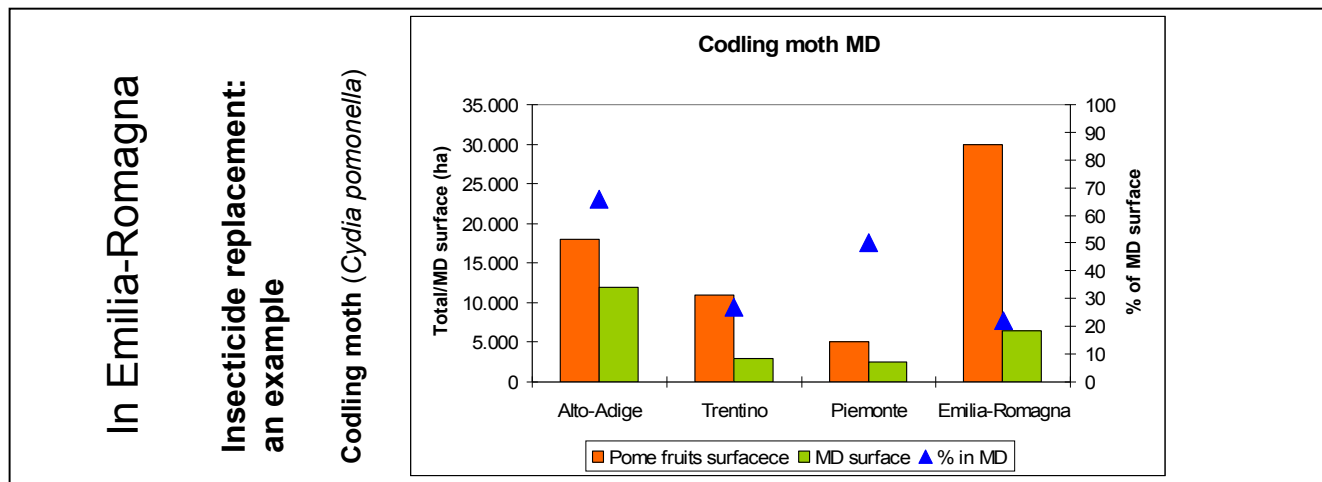
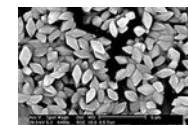
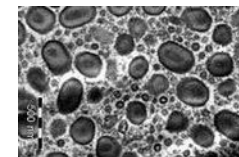
Current general IPM results in Italy



- **Reduction** in the amount of pesticides used = **20-35%** depending on the crop;
- Reduced impact on humans and the environment:
 - between **70 and 90% reduction in pesticides** with high **acute** toxicity (**T+**; **T**).
 - between **40 and 95% reduction** in pesticides with high **chronic** toxicity (**Xi**, **Xn**).
- Strict respect of the residue limits

IPM - Some biorational tools used

- Apple & pear (roughly 32,000 ha)
 - Release of *Anthocoris nemoralis* predator of *C. pyri*
 - roughly 35,000 doses/ha/year of CpGV for codling moth control
 - 800 ha treated by nematodes for codling moth control
 - 6000 ha using MD technique for codling moth (18%)
 - Use of *Bacillus subtilis* based products
- Peach (roughly 30,000 ha)
 - 24,000 ha using MD technique for OFM (80%)
- Other crops:
 - MD largely used
 - beneficial insects largely used in field and greenhouse
 - *Bt ssp.*, *Trichoderma*, Azadirachtin derivatives, etc. largely used



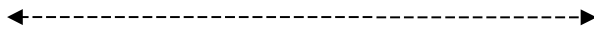
On the way to the EU Directives on the sustainable use of pesticides

First national plan of “Integrated pest and disease control strategy” (1987)

- **1991:** COUNCIL DIRECTIVE of 15 July 1991 concerning the placing of plant protection products on the market (91/414) and upgrading on 2007
- **1992:** COUNCIL REGULATION (EEC) No 2078/92 on agricultural production methods compatible with the requirements of the protection of the environment and the maintenance of the countryside
- REG. (EC) No 1107/**2009** concerning the placing of PPPs on the market and replacing the 91/414

On the way to the EU Directives on the sustainable use of pesticide

Italy



1987: First national plan of “Integrated pest and disease control strategy”.....

2010: National IFP Guidelines (now available for 117 crops) take into consideration the evolution in the EU legislation (pesticide classification, promotion of environment protection replacement of more risky PPPs)

Pesticides limitation or proscription based on

- ✓ toxicological aspects (risk phrases)
- ✓ environmental risk (non-target organisms, water pollution, soil persistence)
- ✓ carry-over effect and residues in foodstuffs
- ✓ risk of selecting resistant populations

2012: National Action Plans

Member States shall describe in their NAP how they ensure that the general principles of **IPM****are implemented by all professional users.**

Europe

- **Council directive 91/414**
 - Concerning the placing of plant protection product on the market, re-registration of pesticide with more stringent rules
- **Council regulation 2078/9**
 - on agricultural production methods compatible with the requirements of the protection of the environment and the maintenance of the countryside
- **REG. (EC) No 1107/2009**
 - concerning the placing of PPPs on the market Some active substances with certain properties should be identified at Community level as **candidates for substitution**. Member States should regularly examine PPPs containing such a.i. with the aim of replacing them by PPPs containing a.i. which require less risk mitigation or by non-chemical control or prevention methods.

- **EU DIR. 2009/128/EC**
 - Sustainable use of pesticides

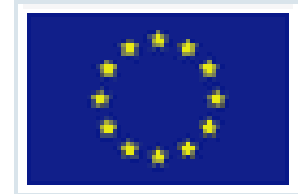


DIRECTIVE 2009/128/EC

of the European parliament and of the Council

establishing a framework for Community action to achieve the

sustainable use of pesticides



europa.eu

Member States shall adopt

National Action Plans to set up:

- **quantitative objectives, targets, measures, timetables**
- to **reduce risks and impacts** of pesticide use on human health and the environment
- to **encourage the development and introduction of IPM** and of alternative approaches or techniques in order to reduce dependency on the use of pesticides



National Action Plans

- **INTEGRATED PEST MANAGEMENT**
- **TRAINING, SALES OF PESTICIDES, INFORMATION AND AWARENESS-RAISING**
 - Training for professional users, distributors and advisors → certification systems provide evidence of sufficient knowledge
- **PESTICIDE APPLICATION EQUIPMENT**
 - Inspection of equipment in use SPECIFIC PRACTICES AND USES
 - Aerial spraying
 - Specific measures to protect the aquatic environment and drinking water
 - Reduction of pesticide use or risks in specific areas:
 - such as public parks and gardens, sports and recreation grounds, school grounds and children's playgrounds and in the close vicinity of healthcare facilities
 - Handling and storage of pesticides and treatment of their packaging and remnants
- **INDICATORS, REPORTING AND INFORMATION EXCHANGE**

IPM and marketing

Total estimated influence on
70% of horticultural land

Integrated production is now
a pre-requisite
for the large-scale retail trade

The market problem

Number of residues on fruits

Limits of residues

Pesticide residues on fruits

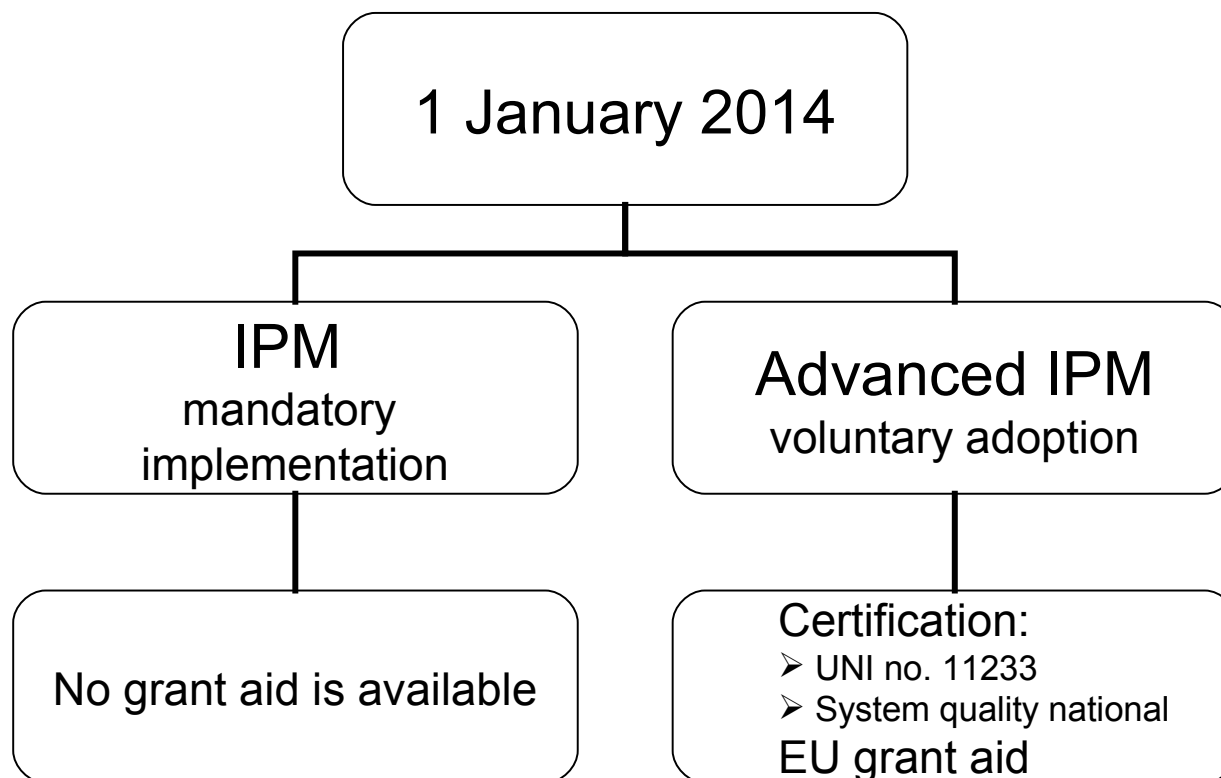
customer

Requested residues limits

Cliente	Richiesta
COOP	Max 30% singolo RMA, max 100% somma RMA
ESSELUNGA	Max 30% singolo RMA, max 40% somma RMA
LIDL	Max 33% singolo RMA
ASPIAG	Max 30% singolo RMA, max 100% somma RMA
BILLA	Max 30% singolo RMA
KAUFLAND	Max 33% singolo RMA, max 100% somma ARFD
KAISER'S TENGELMANN	Max 70% singolo RMA, max 30%/70% singolo ARFD
AUCHAN	Max 50% singolo RMA
CRAI	Max 50% singolo RMA, max 100% somma RMA
EDEKA	Max 50% singolo RMA
CONAD	Max 50% singolo RMA, max 100% somma RMA
GRUPPO SELEX	Max 50% singolo RMA
CARREFOUR	Max 50% singolo RMA
TEGUT	Max 70% singolo RMA, max 70% singolo ARFD, max 4 p.a.
DOHLE-HIT	Max 70% singolo RMA, max 70% singolo ARFD, max 4 p.a.
ALDI	Max 70% singolo RMA, max 80% somma RMA, max 80% somma ARFD, max 4 p.a.
HOFER	Max 70% singolo RMA, max 80% somma RMA, max 80% somma ARFD, max 4 p.a.
REWE	Max 70% singolo RMA



The next IPM general configuration (Europe)



Applied research to support IPM

- Side effects of pesticides
- Alternative control methods (PMD, biological control agents, botanicals...)
- Monitoring tools (beneficials and pests)
- Pesticide application techniques
- Better focus on long lasting effects of pesticides

= enhance the “**Tandem use**” (*BC and selective insecticides*)

**Many thanks to all for the opportunity, organization
and attention, and to South Korea for the
hospitality very appreciate**