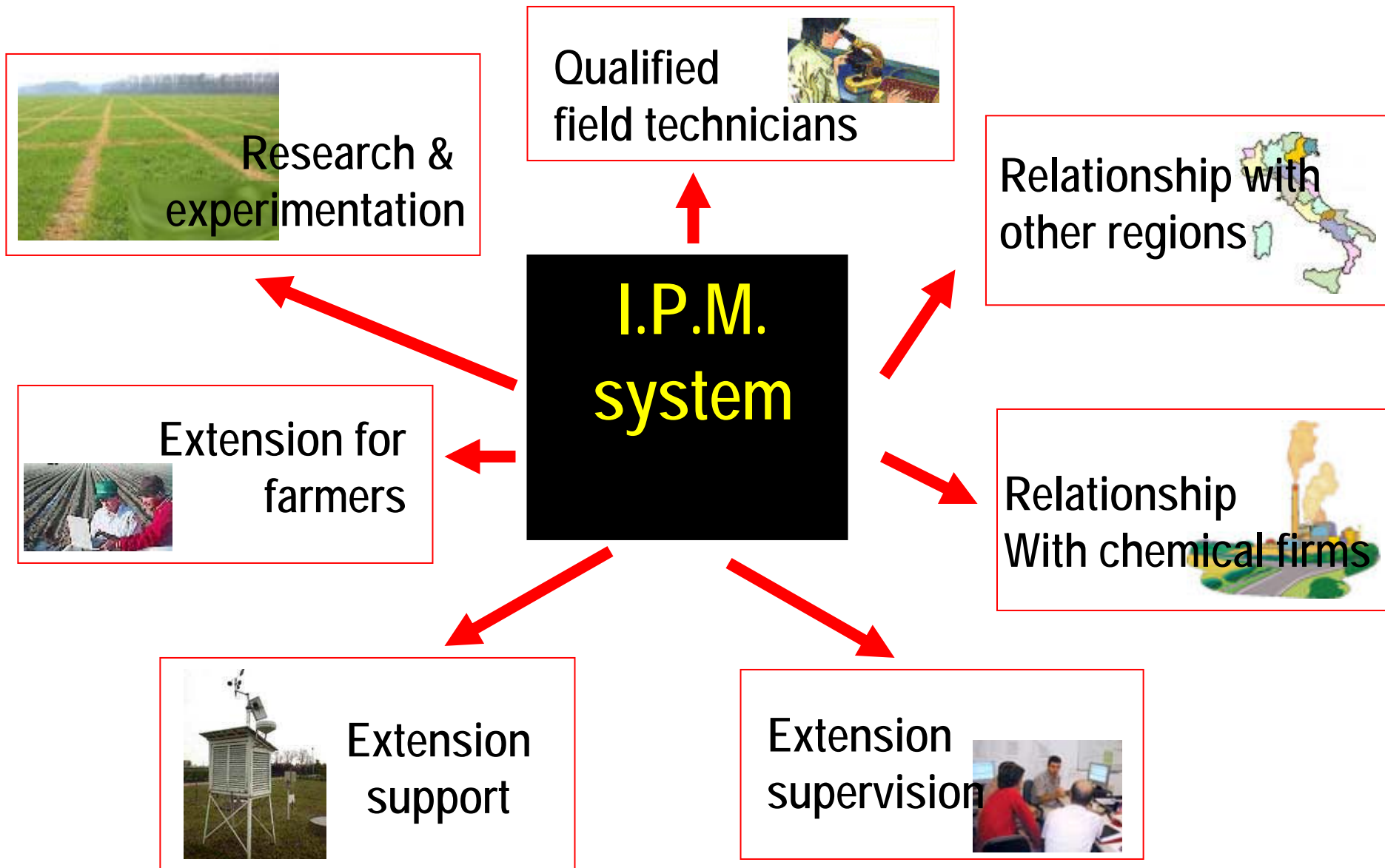


# ORGANIZATION SYSTEM OF INTEGRATED PEST MANAGEMENT

Bugiani R. & T.Galassi

# "Componenti del sistema organizzativo della produzione integrata"



# Roles in IPM Programmes

**P.P.S.**

**Knowledge organization**

Carrying out and supervision of  
experimental projects

**Guidelines build-up**

**Supports management  
and guidelines supervision**

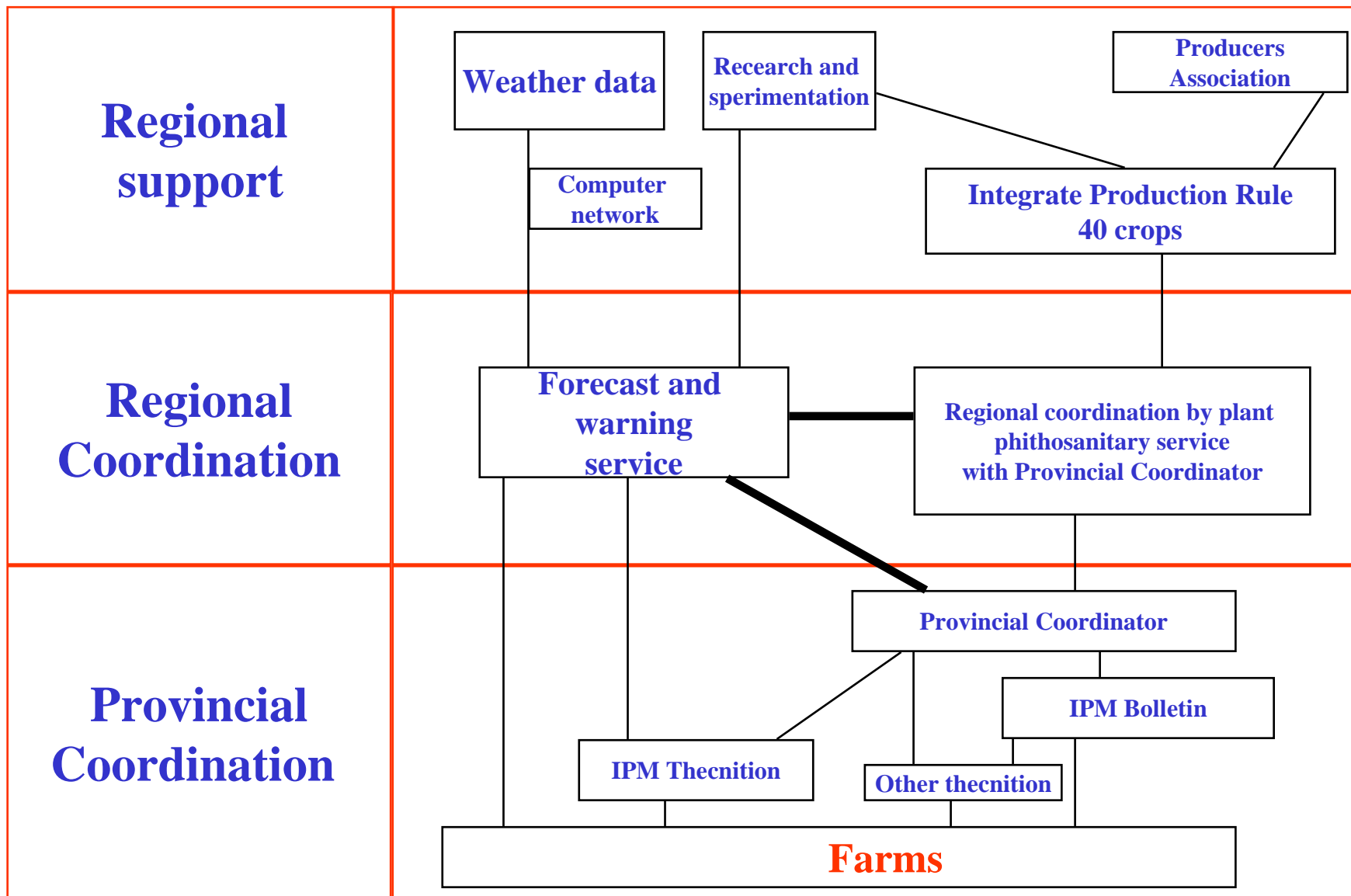
**Provincial  
supervisors**

**Field technician supervision**

**P.O. technicians**

**Trade-union with farmers**

# Technical assistance service - Organisation



# ORGANIZING SYSTEM in Emilia-Romagna



## Research and experimentation programmes with result diffusion

- 130 researches and experimentations directed by P.P.S. and founded by € 1.132.00 (2002) now only € 750.00
- 15 internal meetings
- 12 researchers in Regional Service
- 2 Universities (Bologna and Piacenza)
- Others Institutions and Research Centre

# ORGANIZING SYSTEM in Emilia-Romagna



## Appropriate supports

### Regional meteorological service (ARPA)

Meteo information for whole regional area  
(quadrants km. 5 x km. 5)

Analytical weather forecasting of temperature  
and rain: three days

### Agricultural Information software

**GIAS** (Global Information Agricultural Service)

### Monitoring (specific new programme)

### Forecasting and advisor System

16 forecasting model and 11 in development

# Forecasting and warning system

## "Monitoring web"

From technicians	Particular observations	
	Spore-traps	Unsprayed plots
<ul style="list-style-type: none"> <li>• Adult captures by traps (OFM, Cm, leafrollers, etc.)</li> <li>• Normal sampling (routinely visual survey)</li> <li>• Specific sampling and observations (es. Cm, ecc.)</li> </ul>	<p><i>Stemphylium vesicarium</i> Brown spot</p> <p><i>Venturia inaequalis</i> Apple scab</p> <p><i>Puccinia recondita</i> f.sp. <i>tritici</i> Brown rust</p> <p><i>Phytophthora infestans</i> Potato and Tomato Late blight</p>	<p>Grapevine downy mildew Potato and Tomato Late blight Onion downy mildew Apple scab (apple and pear) Brown spot Peach Leaf Curl Cercospora leaf spot Brown rust Cm eggs</p>

# Forecasting and warning system

## ▪ Currently use



### ▪ Plant diseases

- 10 models

### ▪ Insects

- 6 models

## NEW MODELS IN PROGRESS



### ▪ Plant diseases

- 6 models

### ▪ Insects

- 5 models

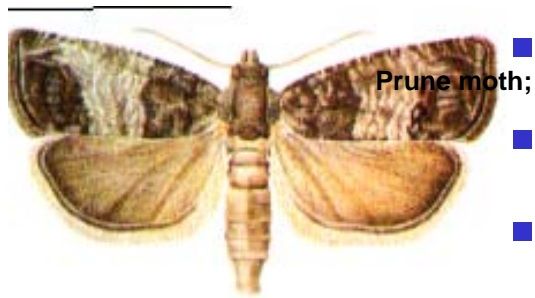
# Forecasting and warning system "Monitoring web - plant diseases"



- *Cercospora beticola* (Cercospora leaf spot)
- *Puccinia recondita* (Brown rust)
- *Erysiphe graminis* (Powdery mildew)
- *Peronospora destructor* (Onion downy mildew)
- *Phytophthora infestans* (Potato and Tomato Late blight)
- *Venturia inaequalis* (Apple scab)
- *Stemphylium vesicarium* (Brown spot)
- *Erwinia amylovora* (Fire blight)
- *Plasmopara viticola* (Grapevine downy mildew)

# Forecasting and warning system

## "Monitoring web - insects"



- *Lobesia botrana* (grapevine moth)
- *Cydia pomonella* (Codling moth)
- *Cydia molesta* (Oriental fruit moth)
- *Argyrothaenia pulchellana* (Grape tortrix)
- *Pandemis cerasana* (Barred fruit tree tortrix moth)
- *Cydia funebrana* (Plum moth)

# Forecasting and warning system

## "Monitoring web - new models in progress"



- *Leptinotarsa decemlineata* (Colorado potato beetle)
- *Anarsia lineatella* (Peach twig borer)
- *Cacopsylla pyri* (Pear psylla)
- *Aphids of horticultural crops*
- *Liriomyza huidobrensis*
- *Uncinula necator*
- *Botrytis cinerea*
- *Taphrina deformans*
- *Erysiphe graminis*
- *Fusarium culmorum*

# ORGANIZING SYSTEM in Emilia-Romagna

Technical assistance to the growers by qualified technicians

Technicians	N° Technician	Sector
Field	280 (*)	Private IPM
technicians	115 (**)	Other private Th.
Coordinators	12	Private IPM
Supporters	11	Public Adm.

# Coordination of the organization system in Emilia-Romagna

Every week = Regional meeting

(Regional experts and Managers from each Province - 30 every year)

Every week = Provincial meeting

(Managers from each Province and technicians - 320 every year)

## Assistance service:

- Farmer visit (routinely)
- Every week = Provincial Bulletin (about 230 every year by (paper - newspaper - local tv - Internet - SMS - phone-answering machine))
- Specific news = every day on Internet

# ORGANIZING SYSTEM in Emilia-Romagna- year 1999



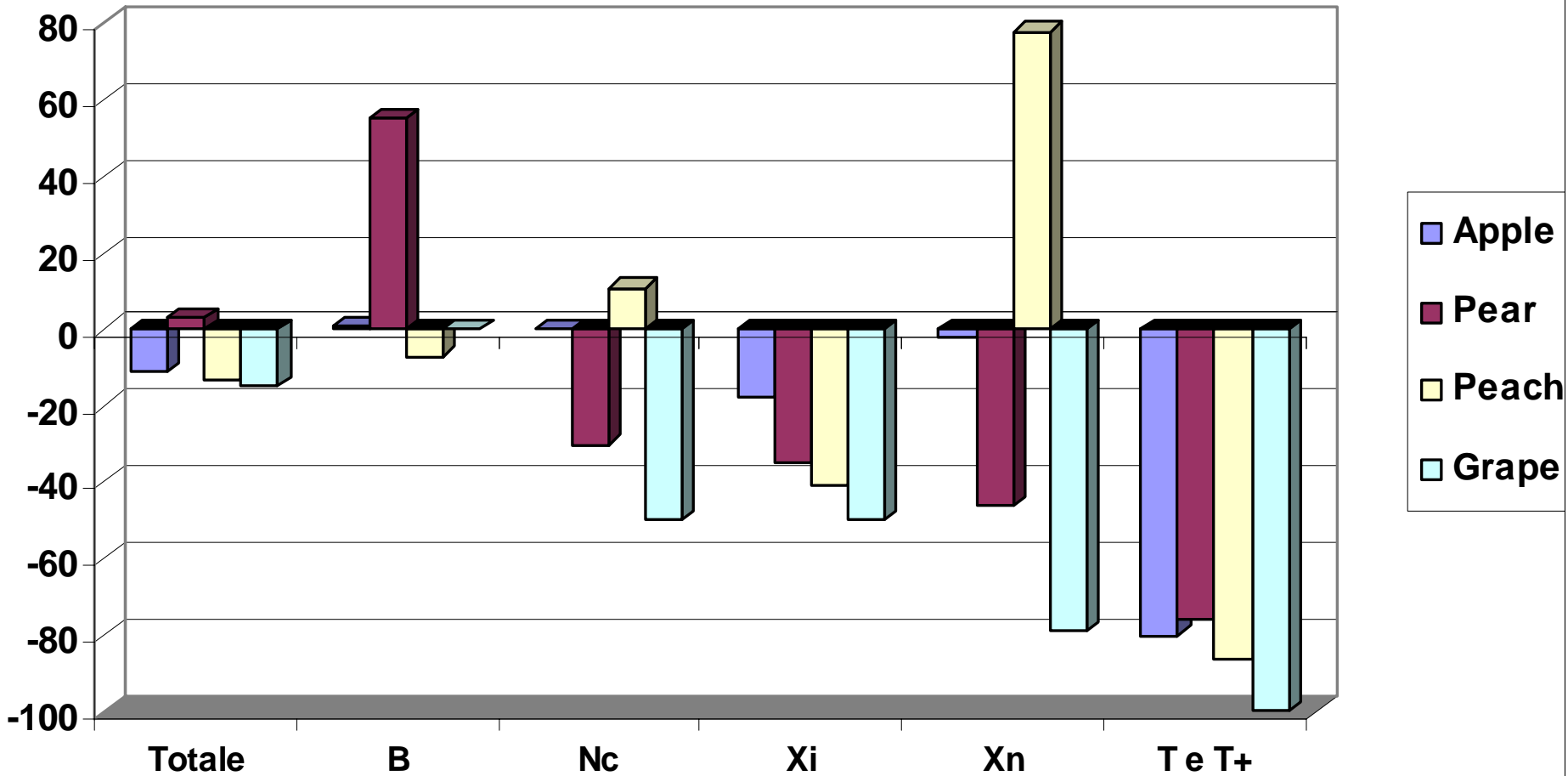
Impact evaluation of IPM programme  
(toxicity class of insecticides)  
Differences (%) between IPM farms and  
traditional ones

1999		Total	Without B	B	Nc	Xi	Xn	T e T+
Apple	gr/ha	12	-31	37	-59	-19	-58	-52
Pear	gr/ha	-15	-33	-1	-36	-12	-73	-78
Peach	gr/ha	-24	-50	-17	-9	-38	-78	-79
Vineya	gr/ha	9	-45	31	-33	-44	-97	-100

B = biological products

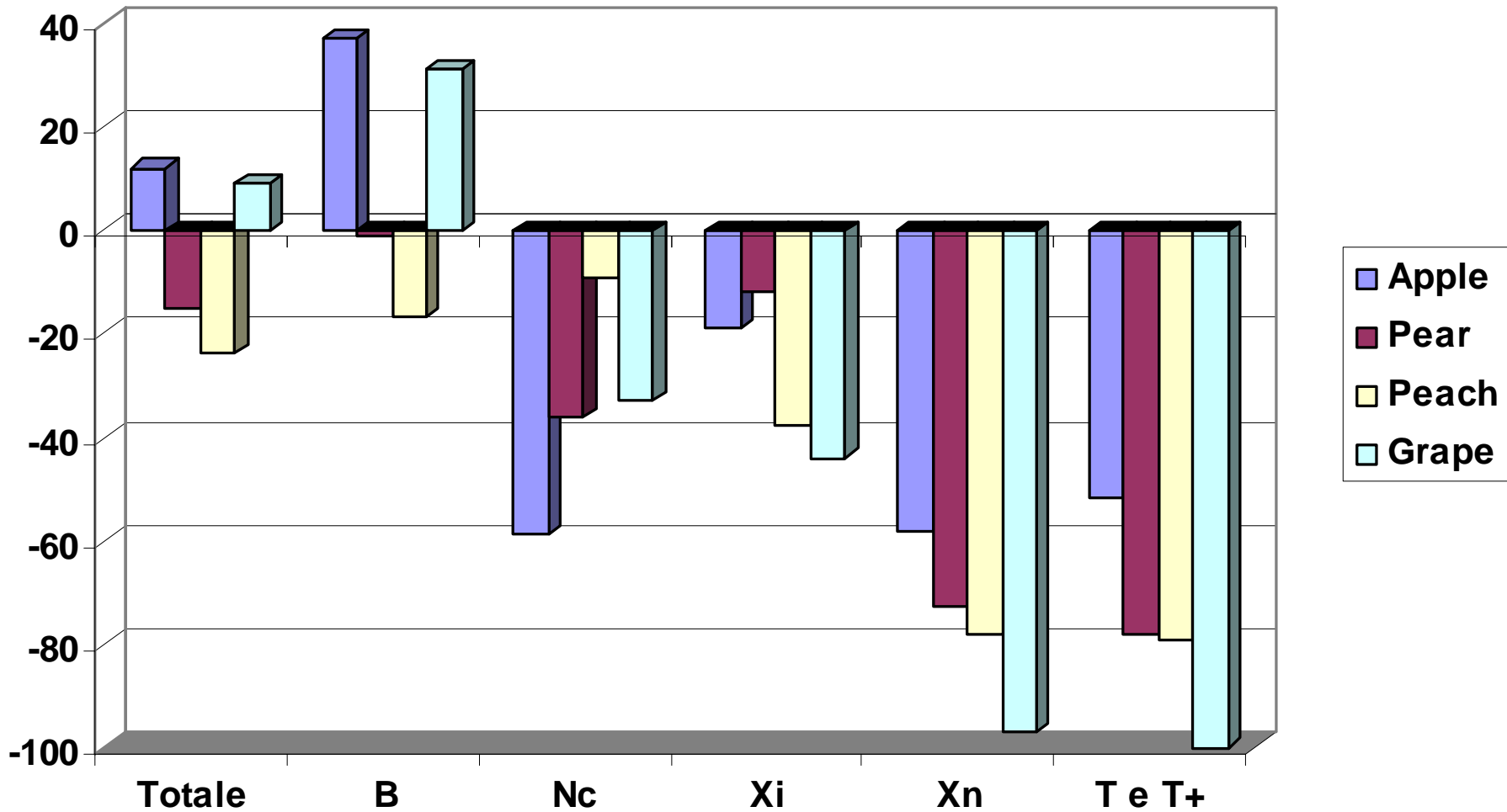
Sample: about 1000 ha

**Impact evaluation of IPM programme  
(toxicity class of insecticides) 1998  
Differences as % between IPM farms and  
traditional ones**

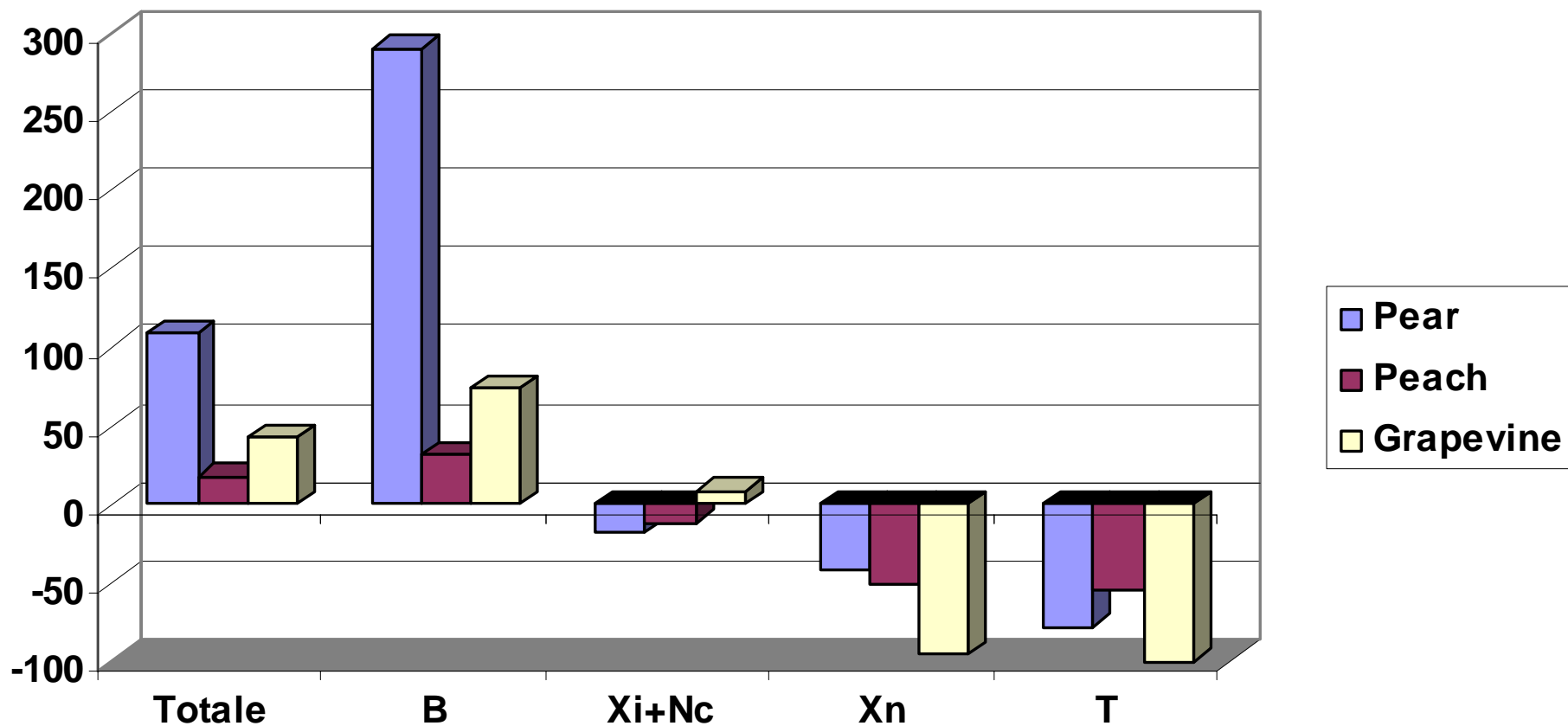


# Impact evaluation of IPM programme (toxicity class of insecticides) 1999

## Differences as % between IPM farms and traditional ones

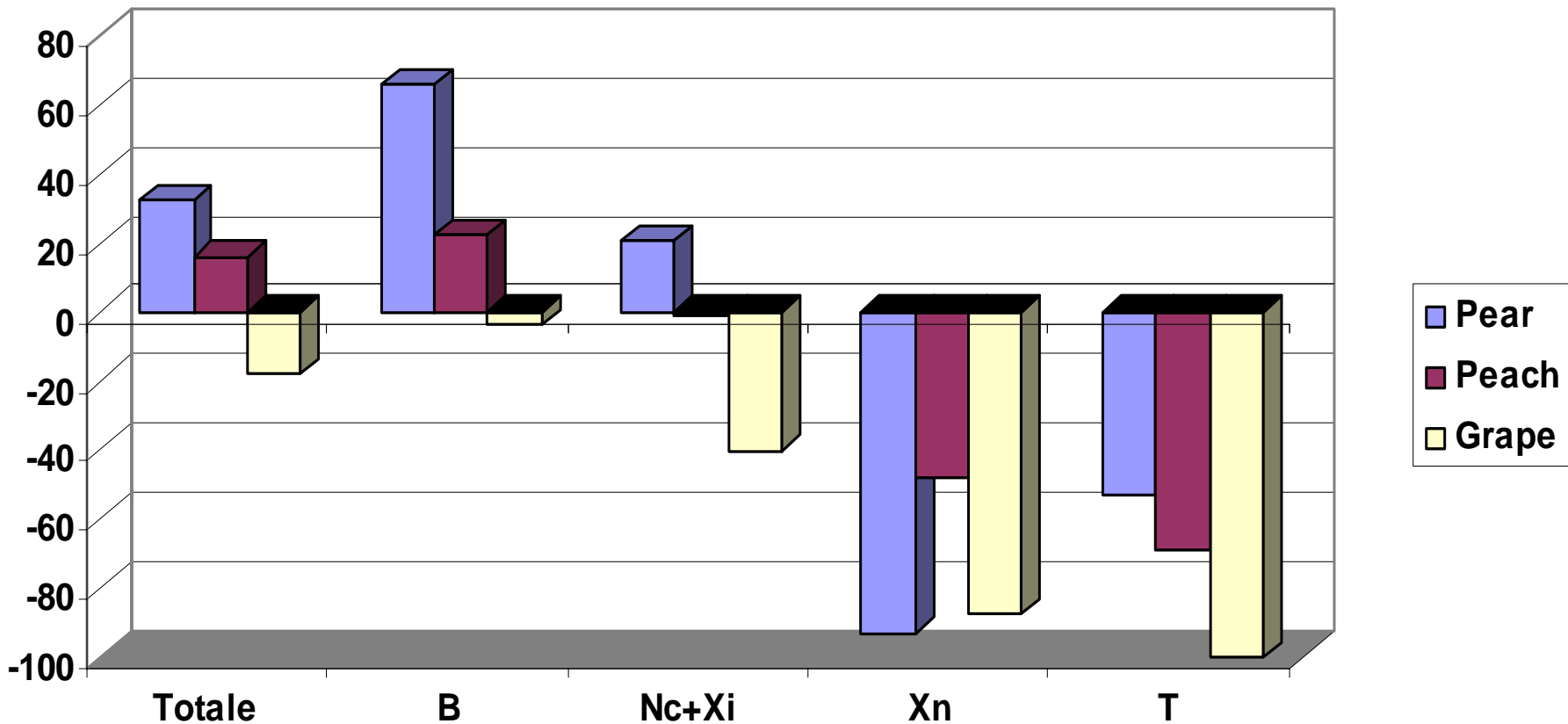


# Impact evaluation of IPM programme (toxicity class of insecticides) 2002 Differences as % between IPM farms and traditional ones



# Impact evaluation of IPM programme (toxicity class of insecticides) 2003

## Differences as % between IPM farms and traditional ones



# I.P.M. in Emilia-Romagna Region

## Fruit orchards

- Soil choice
- Rootstock choice
- Cultivar choice
- Fertilization
- Irrigation
- Soil management
- Impollinazione e diradamento
- Pruning
- Harvest guidelines
- plot management
- Shelf-life management
- Traceability

# I.P.M. in Emilia-Romagna Region

## Internet

[http://www.ermesagricoltura.it/wcm/ermesagricoltura/consigli\\_tecnici/disciplinari/sezione\\_disciplinari.htm](http://www.ermesagricoltura.it/wcm/ermesagricoltura/consigli_tecnici/disciplinari/sezione_disciplinari.htm)