Plant session II (Integrated plant protection)

Xingang Liu

Institute of Plant Protection, CAAS

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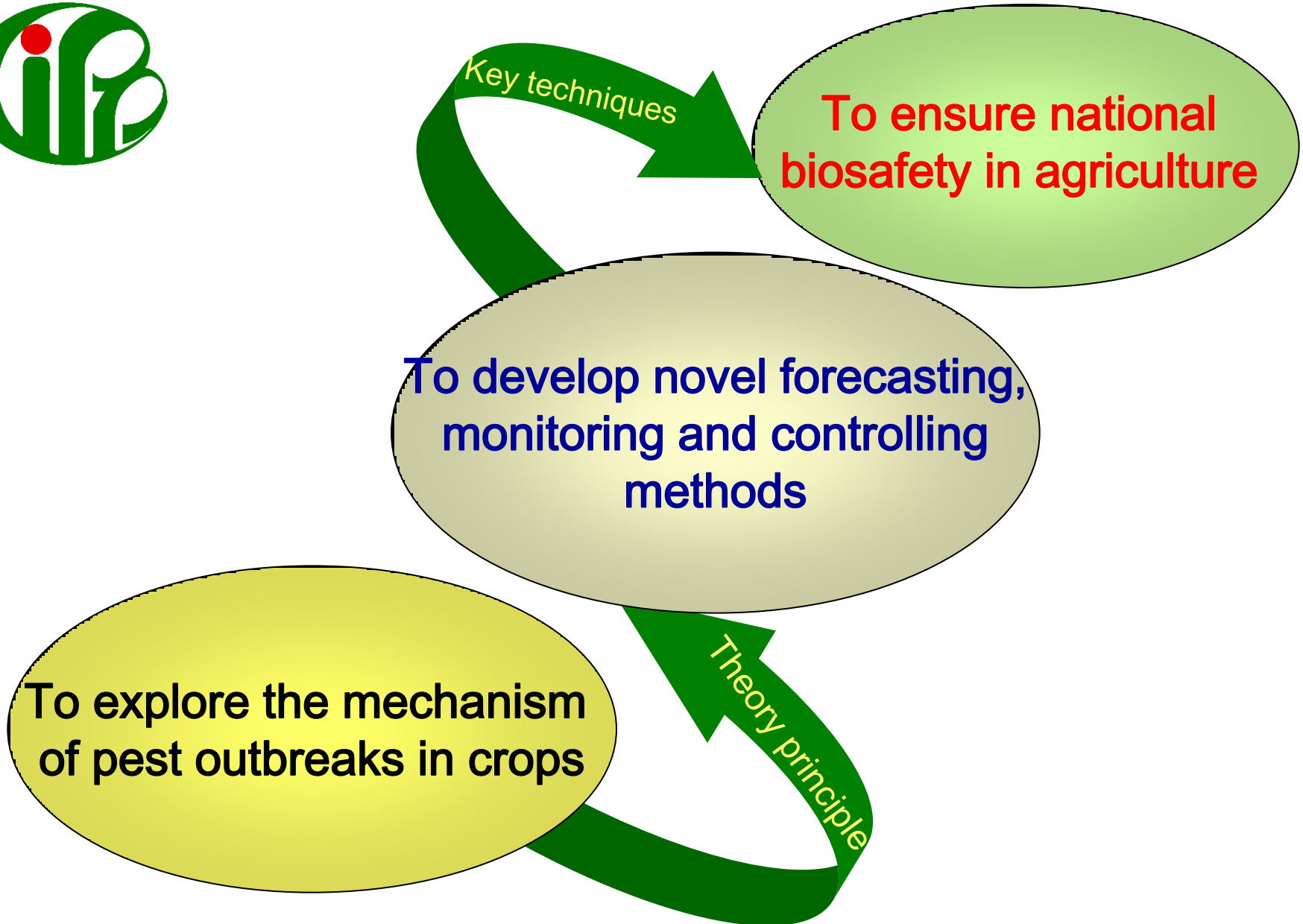
Mission and Goal

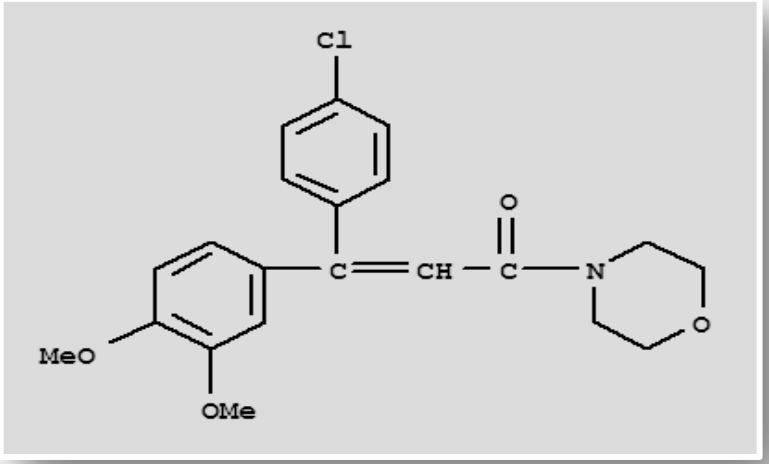


Goal：risk assessment of pesticide application and to control the pesticide residue contamination

Pesticide residue and environmental fate

PART 2
Problems

Pesticide is an important guarantee for agricultural production safety



Wheat scab

Cucumber downy mildew

cabbage caterpillar

Potato beetle

Ragweed

Microtus fortis

Pesticide use can save 1/3 losse of global food

Pesticide production

With the adjustment of the agricultural structure of China, and with a greater demand for change of pest and disease,

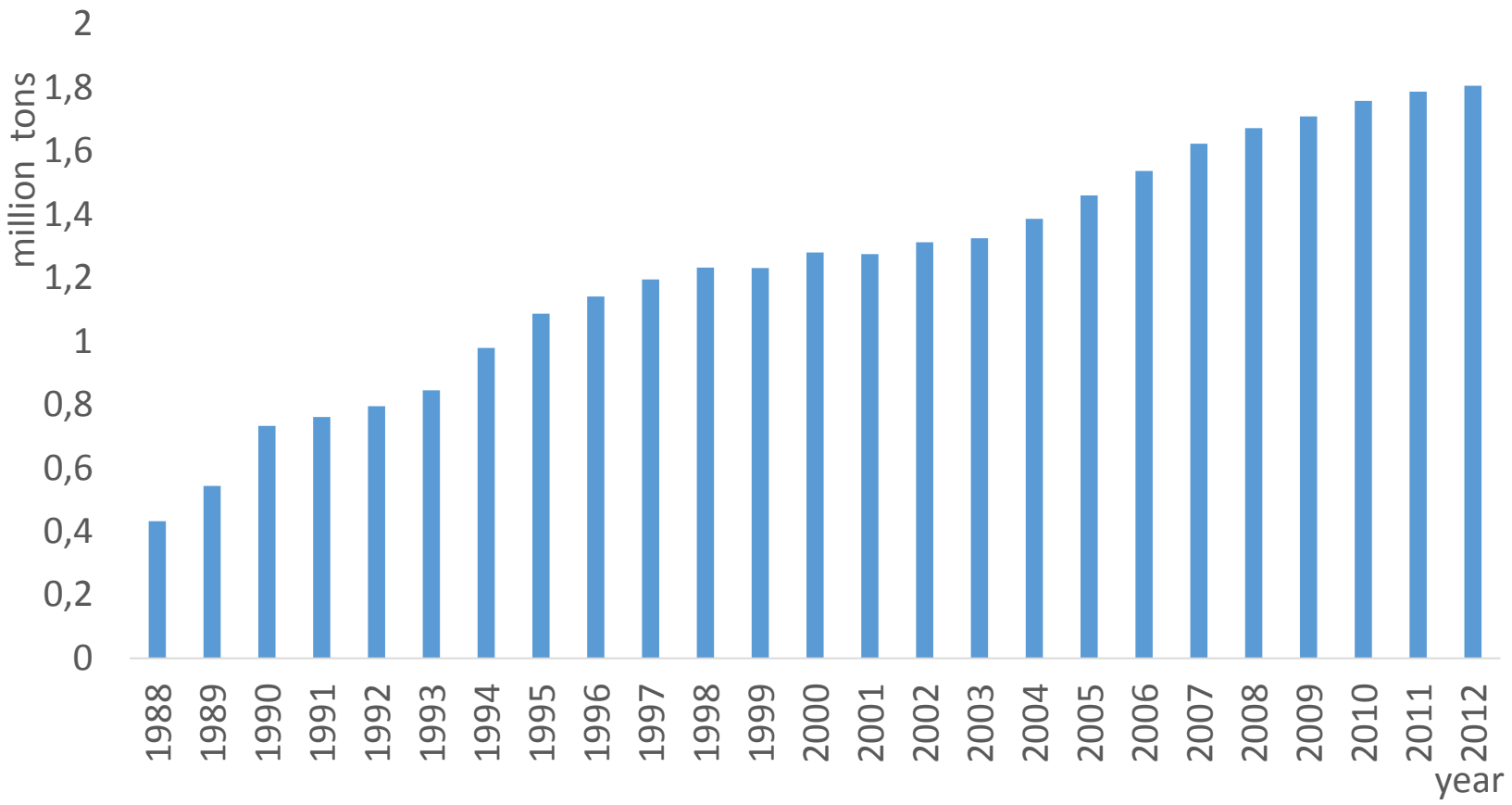
the overall production situation of pesticides have a greater impact :

Insecticide and fungicide: gradually decreased,

herbicide, : upward trend,

other (plant growth regulators, rodenticides, health insecticide): increased greatly.

The status of pesticides use in China



Development from small to large-scale plant protection machinery

60 years ago, sprayed with water pump

50 years ago, carrying a manual sprayer

30 years ago, with a mist sprayer

Now, new machinery spray

Excessive use still lead to agricultural product and environmental safety issues

- The average amount of chemical pesticides is 2.5 times the world's developed countries, in 2013 has reached 1.8 million tons.

- In April 2014 the Ministry of Environmental Protection and the Ministry of Land and Resources issued the "National Soil Pollution Situation.“ Investigation bulletin "in the pesticide has become the main organic pollution of arable land and forest land.

- Pesticide residues caused safety issues, affecting the public's consumer confidence and industrial development.

- Damage to environmental biological diversity of natural enemies or other beneficial insect pests greatly reduced, resulting in a vicious cycle of increasing pesticide use, an increase of agricultural production inputs.

PART 3
Challenges

How to reduce pesticide use to ensure food and environmental safety, and to ensure food security

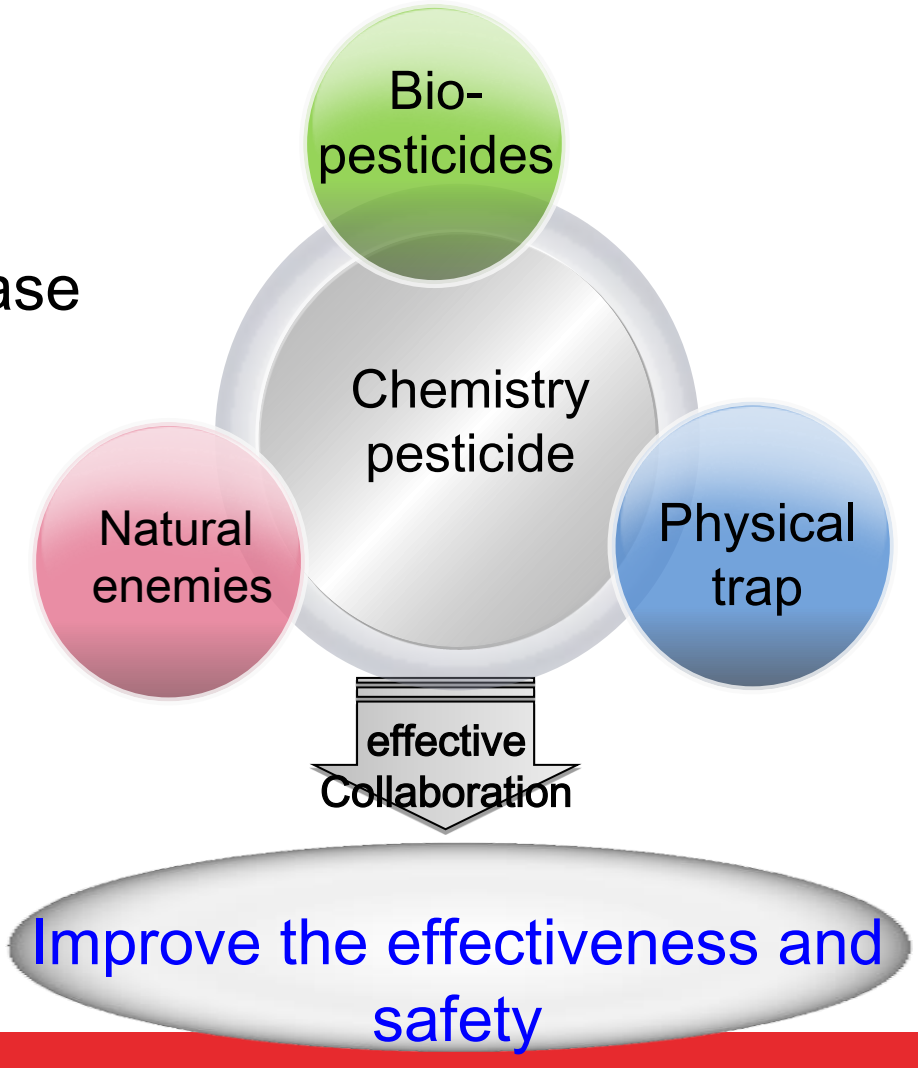
1. Thousands of agricultural commodities and even more processed products;
2. Complex and diversified farming system, cultivating practices and climate change;
3. A huge number of pesticide applicators and disparity in equipment and skills;
4. Lack of basic data about residue in field and good communication with pubic

PART 4
Potential Cooperation Field

1. Integrated control technology

Pest and disease

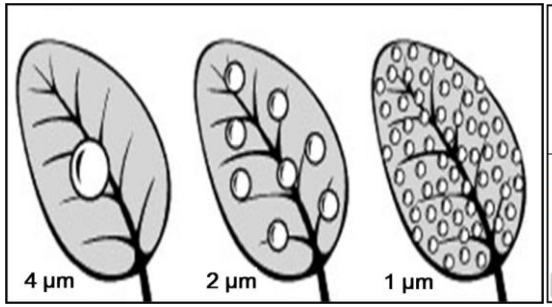
Crop
Vegetable
Fruit
Oil crop

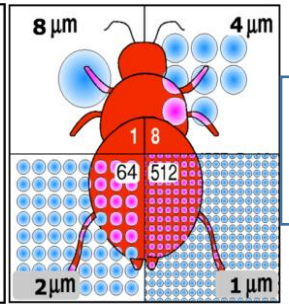


2. Improve the efficient usage of the chemical pesticide

Occurrence of harmful organisms

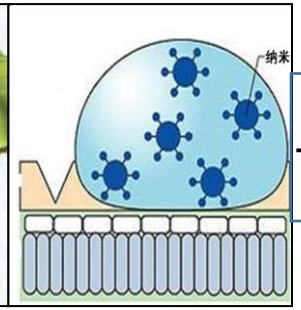
To achieve regular, fixed-point precise application





Dispersion and retention on target

To achieve efficient retention by application technology



Deposition and Transport on Target

Good pesticide formulations

3. Plant protection machinery

- (1) the lack of the special agents and additives to match unmanned aerial vehicles; application of unmanned aerosol liquid volume is the conventional dosage of about 1/30. The nozzle clogging often occur. The lack of special additives for unmanned aerial application, resulting in serious evaporation and drift;
- (2) plant protection operations risk control research, especially the safety distance and the surrounding environment and biological risk.
- (3) the application of the variable spraying system; operations or speed change, can not be well controlled spray flow caused by crop injury, environmental pollution;

4. Establish an effective monitoring system of pesticide residue

- Develop effective pesticide multi-residue analytical methods

  fast, environment friendly, high sensitive, low-consume

- Invent on-site rapid detection equipment.

  Non-destructive measurement technologies for rapid assessing the mineral nutrient status of plant in the field (including contamination, pesticide residues, etc) .

- Fate of pesticide and it's metabolites in Plant and soil, and Modeling of environmental risk assessment about pesticide

  Degradation pathway, products in different existed sample matrix (edible portion of Plant)

Thanks for your attention！

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