The use of chemical pesticides on potato is increasing in developing countries, as farmers intensify production and expand cultivation into areas and planting seasons beyond the crop’s traditional range. The chemicals used are frequently highly toxic and applied with little or no protective equipment.

The result is alarming levels of pesticide poisoning in farming communities. Insecticide absorbed by soil often penetrates subsequent crops and runs off to contaminate water supplies. Overuse of pesticides even compounds pest and disease problems: in Colombia, outbreaks of a viral disease have been linked to insecticides that wiped out natural predators of the disease’s vector.

Increasing potato production while protecting producers, consumers and the environment requires a holistic crop protection approach encompassing a range of strategies – encouraging natural pest predators, breeding varieties with pest/disease resistance, planting certified seed potatoes, growing tubers in rotation with other crops, and organic composting to improve soil quality.

There is no effective chemical control, for example, against bacterial wilt. But planting healthy seed in clean soil, using

**Key points**

Intensive potato cultivation tends to increase pest and disease pressure, which often leads to intensive use of harmful pesticides.

Resistant potato varieties and improved cultural practices can reduce or eliminate many common pests and diseases.

Integrated pest management has helped farmers drastically reduce the need for chemical controls while increasing production.

**Some of potato’s main enemies**

**Diseases**

- **Late blight**: the most serious potato disease worldwide, is caused by a water mould, *Phytophthora infestans*, that destroys leaves, stems and tubers.
- **Bacterial wilt**: caused by the bacterial pathogen, leads to severe losses in tropical, subtropical and temperate regions.
- **Potato blackleg**: a bacterial infection, causes tubers to rot in the ground and in storage.
- **Viruses**: disseminated in tubers, can cut yields by 50 percent.

**Pests**

- **Colorado potato beetle** (*Leptinotarsa decemlineata*): a serious pest with strong resistance to insecticides.
- **Potato tuber moth**: most commonly *Phthorimaea operculella*, is the most damaging pest of planted and stored potatoes in warm, dry areas.
- **Leafminer fly** (*Liriomyza huidobrensis*): A South American native common in areas where insecticides are used intensively.
- **Cyst nematodes** (*Globodera pallida* and *G. rostochiensis*): serious soil pests in temperate regions, the Andes and other highland areas.
tolerant varieties in rotation with non-susceptible crops, and other sanitation and cultivation practices can lead to significant reduction of the disease. Incidence of potato tuber moth can also be reduced by preventing soil cracking that allows moths to reach the tubers.

Both the International Potato Center (CIP) and FAO advocate Integrated Pest Management (IPM) as the preferred pest control strategy during production. IPM aims at maintaining pest populations at acceptable levels and keeping pesticides and other interventions to levels that are economically justified and safe for human health and the environment.

FAO has promoted IPM in many developing countries using Farmer Field Schools, which centre around a “living laboratory” where farmers are trained to identify insects and diseases and compare results on two subplots – one using conventional chemical pest control and the other using IPM. On the improved management plot, participants strive to improve ecosystem health by cutting pesticide use while increasing productivity through management intensification. Farmers experiment with a variety of techniques, such as weevil traps, different strains of potatoes and targeted applications of lower toxicity pesticides.

In Peru’s Cañete River valley, CIP entomologists designed an IPM package to help growers protect their crops against the leafminer fly, which had become a major problem after massive use of insecticides exterminated its natural enemies. The IPM programme included traps to lure and kill adult flies and reintroduction to the valley of parasitic wasps. Participating growers were able to reduce spraying from 12 times per season to only one or two carefully timed applications of insect growth regulators.

**Virus control**

Because virus-infected potato plants cannot be cured, CIP is working to incorporate into new varieties resistance to the three most common potato viruses. Some virus resistance is now available in about a quarter of CIP-bred genotypes.

**Beating late blight**

The mould responsible for late blight has consistently overcome resistant cultivars and mutated into strains that survive spraying with powerful fungicides. The Global Initiative on Late Blight, a network of scientists, technologists and agricultural knowledge agents in 72 countries, is exploring new control strategies, including “organic management” using improved sanitation in storage, risk forecasting and genetic resistance.

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**About IYP 2008**

The International Year of the Potato, to be celebrated throughout 2008, aims at raising global awareness of the potato’s key role in agriculture, the economy and world food security.

**www.potato2008.org**

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**Credits:**

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