

Alternatives to pesticides

About this sub-section

This sub-section will help us to:

- find out about alternatives to pesticides
- prepare us to argue for alternatives in our workplaces especially as part of collective bargaining agreements

Introduction

In agriculture, especially where the same crop is grown repeatedly on the same land (monocultures), the indiscriminate use of pesticides has led to problems of pesticide dependence, pesticide resistance, and pest resurgence. The overuse of chemicals has meant that pests have evolved resistance to certain pesticides, i.e. they are no longer killed or controlled by certain pesticides. Calendar application of pesticides has also harmed non-target, beneficial predators, parasites and pathogens which help naturally control pests. As a result there has often been a resurgence of the surviving pest which the pesticide was unable to control, leading to new crop losses. Indeed, there is growing evidence to show that far from solving pest problems, pesticides may aggravate existing ones and even create new pests.

Regular pesticide use can lead to dependence where more and more pesticide or newer and newer active ingredients have to be used to maintain pest control levels. Farmers, who were dependent upon yields made possible by pesticides, need to apply more and more powerful pesticides to sustain yields. These problems have prompted the search for alternatives to chemical pesticides, which can be broadly categorised as:

- Integrated Production and Pest Management
- Organic Agriculture

Note: The pesticide/biotechnology industry claims that use of biotechnology, based on genetically modified organisms (GMOs), could provide alternatives to chemical pesticides. This claim however needs careful discussion and examination as there are many areas of uncertainty and many powerful counter-arguments to this industry claim. For this reason, the subject of genetically modified organism biotechnology and pesticides is not dealt with here as an alternative.

ACTIVITY IPPM

AIMS

To help us to:

- identify the key aspects of IPPM
- practise the skills of presenting information

BACKGROUND

A union general secretary has been asked to attend a tripartite meeting to discuss the potential use of IPPM. The union general secretary wants to be briefed by the union health and safety adviser prior to the tripartite meeting on the IPPM fundamentals.

TASK

The group will be split into groups of union general secretaries, union health and safety advisers and observers. Using the pages below on IPPM and Fact Sheet 14 in Section 4 of this Manual:

- the union health and safety advisers will be asked to prepare to brief the union general secretary and answer questions
- the union general secretaries will think about questions that they would like to ask
- the observers will prepare a checklist of points they will watch out for during the interview

You will then be divided into groups of three, one union general secretary, one union health and safety adviser, and one observer. The union health and safety adviser will brief the union general secretary and answer questions. The observer should watch and listen, and note down the main points of the conversation.

Observers will report back, giving the key points to the larger group.

Integrated production and pest management

IPPM progress

Integrated Production and Pest Management (IPPM) is one of the main alternatives to use of synthetic chemical pesticides. IPPM programmes in both developing and developed countries have made significant progress towards reducing pesticide use and associated negative impact on health and the environment. Numerous field cases have shown that it is possible to reduce the negative impact of pesticides through better pest management and better selection of pest management inputs, while maintaining yields, profitability and quality. Large scale examples include rice in Southeast Asia and Africa, protected production of vegetables in Northern Europe, cotton globally, and various other crops such as maize, wheat and open field vegetables.

IPPM can be used by workers and trade unions to avoid use of/exposure to toxic, synthetic pesticides.

What is Integrated Production and Pest Management (IPPM)?

In the FAO International Code of Conduct on the Distribution and Use of Pesticides (Revised Version 2002), “IPM means the careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimise risks to human health and the environment. IPM emphasises the growth of a healthy crop with the least possible disruption to agro-ecosystems and encourages natural pest control mechanisms”.

Put simply, IPPM involves training waged agricultural workers and farmers to recognise both 'pests' - insects, diseases etc - and the natural enemies which control them. This includes the importance of maintaining the plants, natural habitats and eco-systems on and in which natural enemies feed, live and breed. The IUF is working with an international agency, the Global IPM Facility, to train agricultural workers in IPPM techniques and to supply them with appropriate technical information. The workers can then use the training and information to include IPPM clauses in collective bargaining agreements with employers as alternatives to the use of toxic pesticides. IPPM is better for the workers and managerial staff, and less damaging to the crops.

For full details about IPPM, see Fact Sheet 14 in Section 4 of this Manual

Organic agriculture

Introduction

In many countries pesticides are an essential, if for many a sometimes unwelcome, part of modern agriculture, horticulture and land management, and even small-scale farming. For a growing number of organic farmers this is no longer the case. There is increasing interest in the practice of organic agriculture, farming and gardening worldwide, and growing consumer demand for organic produce, often sold at premium prices. Organic cultivation avoids the use of both soluble nitrate fertiliser and synthetic chemical pesticides. Many farmers are converting to organic agriculture, and there is growing State support in many countries to help them move to organic agriculture or less intensive, more sustainable agricultural production methods.

Research on conversion from conventional to organic production suggests that increasingly organic farming and other types of sustainable agriculture are viable options.

National associations of organic farmers and even gardeners have sprung up in many countries. In addition, international networks have been created such as, for example, the International Federation of Organic Agricultural Movements (IFOAM).

Advantages of organic agriculture

Organic methods have many advantages, including:

- elimination of chemical pesticide use
- reduced leaching of nitrate fertilisers into rivers and watercourses
- reduced soil erosion

Organic agricultural methods

Organic growing does not just mean going back to traditional methods, which were in use before the advent of artificial pesticides. Used professionally, it is a sophisticated technique which relies on a detailed understanding of ecology, soil science and crop breeding. At the same time, the basic steps can be used by any gardener.

Important elements of organic growing are:

- Crop rotation to build up soil fertility and break the life cycle of crop-specific pests. One element in the rotation is a leguminous plant (i.e. a member of the pea and bean family); these plants have bacteria in their root nodules that can 'fix' nitrogen from the air and store it in plant tissues. Ploughing in the remains of the legume allows nitrate levels to be maintained in the soil
- Recycling nutrients through composting and careful use of animal manure. These methods top up nitrate levels where necessary, and also increase the amounts of trace elements in the soil. Manure is usually composted before application, to make sure that it is not leached away by rain
- Non-chemical pest and weed control. This includes IPPM, biological control; cultural control (through planting strategies, etc); and use of mechanical weeders, flamers and so on
- Mixed farming or gardening practised in an extensive system. Ideally, organic farms have fairly small fields and a mixture of crops and livestock
- Care for wildlife and the countryside whilst producing food. Humane treatment of animals, allowing them access to pasture and no unnecessary exposure to drugs or hormones. Animal welfare organisations back organic farming because of its improved treatment of livestock

Controlling pests on an organic farm

Insect and disease control in organic agriculture is primarily preventative rather than curative. In addition to good husbandry and hygiene, the key factors of insect and disease control are:

- balanced rotational cropping to break the pest and disease cycles
- balanced supply of plant nutrients
- the creation of an ecosystem in and around the crop which encourages predators, utilising, where appropriate, hedgerows or mixed plant breaks within fields, companion planting, undersowing and mixed cropping
- the use of resistant varieties and strategic planting dates

In addition, permitted methods of pest and disease control include mechanical controls using traps, barriers and sound; herbal, homoeopathic and biodynamic sprays; waterglass (sodium silicate); bicarbonate of soda; soft soap; steam sterilisation; biological control with naturally occurring organisms; and conventionally grown seed

If these do not provide sufficient protection, some organic standards also contain a number of 'restricted' methods. These include use of a number of plant-based insecticides and fungicides, including natural pyrethrum and rotenone.

The key to pest control on organic farms is the system as a whole, rather than any individual steps. Chemical farmers say, quite rightly, that if they cut out all chemicals overnight, they would be over-run by pests. The conversion period needed to qualify for organic food standards is not just set to 'detoxify' the soil of any agrochemicals, but is also necessary to allow the growing area to come into nutrient balance again, build up predators, parasites and pathogens of pests, and so on.

This does not mean that organic farmers never have problems with pests. They do, and then they resort to methods of pest control, which sometimes include the use of the small number of plant-based pesticides cleared for use by certified organic producers. But organic farmers vastly reduce the need for pest control, and thus also reduce the need for pesticides:

- organic farmers do not control pests where none occur. They do not practise insurance, calendar spraying, which means spraying in case a pest or disease should occur, (and which sometimes does more harm than good by killing off the beneficial natural enemies of pests as well)
- they do not use cosmetic spraying, that is applying pesticide to make produce look better. People buying organic food would rather have say, harmless skin scabs on apples than synthetic pesticide residues within the apples
- organic farmers use non-chemical methods of pest control wherever possible. This means that when they do have to resort to pesticides, such as pyrethrum and derris, in a genuine emergency, the pesticides have a proportionately greater effect than when the land is routinely soaked in agrochemicals