

SUCCESSFULLY MAINTAINING CROP AND ECOSYSTEM HEALTH:

ecological processes to regulate pests and improve product quality

SUSTAINABLE CROP INTENSIFICATION ALSO REQUIRES LONG-TERM STRATEGIES TO MINIMIZE THE LOSSES FROM PESTS AND DISEASES. THIS CAN INVOLVE PLANTING DISEASE- OR PEST-RESISTANT CROPS, ROTATION OF CROPS (INCLUDING CROPS WITH PASTURE), APPLYING NON-CHEMICAL CONTROL PRACTICES OR LIMITED TACTICAL USE OF AGROCHEMICALS.

COUNTRIES BORDERING LAKE VICTORIA *biological control of aquatic weeds*

Aquatic weeds infest a significant number of freshwater bodies worldwide. Plants such as water hyacinth have invaded lakes, ponds, rivers, canals and agricultural fields, damaging trade, and the fisheries and agriculture sectors. Chemical means of control are not recommended given the risk of collateral damage to water quality and to non-target aquatic species.

FAO has assisted countries in East Africa with the design and implementation of IPM programmes for the biological control of aquatic weeds, salvinia, etc. Biological control of water hyacinth usually involves the release of weevils (such as *Neochitina eichhorniae*); to be effective large scale and long term programmes need to be established for rearing/ releasing the insects, with the full involvement of the local communities.

INDONESIA *limiting insecticide overuse*

Inefficient use (and overuse) of insecticides has the potential to create serious environmental damage as well as to threaten the health of farmers and consumers.

Indonesia saw rapid growth in pesticide consumption during the Asian Green Revolution. The country also experienced some of the attendant environmental and human health problems.

FAO promotes IPM as the preferred approach to crop protection; this ranges from support to training at field level through Farmer Field Schools through to assistance for policy makers. Once the risks of pesticide overuse are understood, one key policy reform for many developing countries has been removal of government pesticide subsidies. The results of such a reform in Indonesia were a sustained and significant decrease in insecticide use, while total food grain production continued on a rising trend.

MOZAMBIQUE *fruit fly surveillance*

The introduction of a new fruit fly species – *Bactrocera invadens* – to East Africa has created a major disruption to fruit production, now extending to at least 20 countries across Sub-Saharan Africa. As usual with fruit fly infestation, options for mitigation include use of baited traps, general orchard hygiene and IPM, as well as various forms of post harvest treatment. However, these can be difficult to implement on a large scale.

In Mozambique, the strengthening of the phytosanitary services through an FAO Technical Cooperation Project has coincided with government interest in the impact of fruit flies on trade. *B. invadens* has threatened fruit exports to the country's main trading partner, South Africa. Beginning with programmes of surveillance, the problem is being tackled through a range of projects and programmes funded by both donors and the Mozambican government.

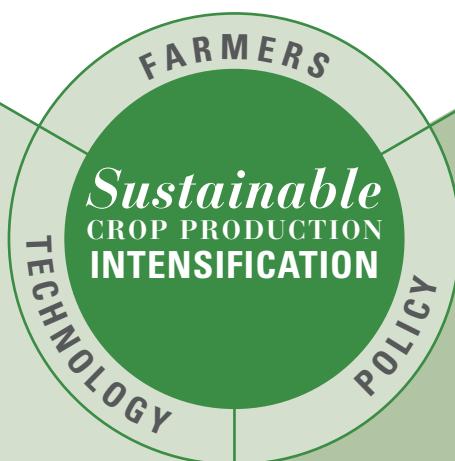


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- extension, field schools, demonstration plots, farmer networks, local village research stations on
 - costs and benefits of improving crop protection and
 - how to foster biological pest control
- monitoring occurrence of pests on a wide area scale

- pest or disease-resistant cultivars, crop sequences, associations, and cultural practices that minimize the pressure and maximize biological prevention of pests and diseases
- field diagnostics for surveillance
- deployment of new handheld technologies to gather data and apply pest and disease forecasting techniques where available.
- understanding of the scientific basis for IPM practices



- removing perverse subsidies
- promoting environmentally-friendly pesticides and discouraging use of more toxic substances
- promoting IPM
- setting and implementing legal requirements for the production, sale, storage and use of agrochemicals in line with the FAO Code of Conduct on Pesticides

COMBINED APPROACHES BASED ON INTEGRATED PEST MANAGEMENT (IPM) PRINCIPLES HELP IN MANAGING ESTABLISHED (ENDEMIC) PESTS. COUNTRIES HAVE ALSO TAKEN STEPS TO REDUCE THE OVERUSE OF PESTICIDES, WHICH HAS BEEN FOUND TO LEAD TO PESTICIDE-INDUCED PEST OUTBREAKS AS WELL AS HUMAN HEALTH PROBLEMS. MEANWHILE, SURVEILLANCE AND QUARANTINE MEASURES UNDERPIN ATTEMPTS TO CONTROL INVASIVE TRANS-BOUNDARY PLANT PESTS.

REDUCING LOSSES DUE TO PLANT DISEASES AND PESTS INCLUDING STORAGE PESTS CAN MAKE A SIGNIFICANT CONTRIBUTION TO INCREASING FOOD SUPPLY. FIELD PRACTICES WHICH MAINTAIN CROP HEALTH CAN BENEFIT BOTH THE YIELD AND THE QUALITY OF PRODUCE. LONG-TERM STRATEGIES WHICH HARNESS BIOLOGICAL PROCESSES CAN HELP REDUCE BOTH THE OCCURRENCE OF PLANT DISEASES AND THE DESTABILISING IMPACT OF PESTS. SELECTING RESISTANT VARIETIES AND CROP ROTATIONS (TO PROVIDE DISEASE BREAKS), TOGETHER WITH THE APPLICATION OF OTHER CONTROL PRACTICES CAN REDUCE THE INCIDENCE AND SEVERITY OF DISEASE. FOR PLANT PESTS, FARMERS CAN BE ENCOURAGED TO ASSESS QUANTITATIVELY THE BALANCE BETWEEN PESTS AND BENEFICIAL ORGANISMS (PREDATORS), AND TO DEVELOP AND ADAPT ENVIRONMENTALLY-FRIENDLY APPROACHES TO PEST CONTROL.

Sustainable CROP PRODUCTION INTENSIFICATION around the world

