

# Adding value to IPM with biologicals

Pressure to produce healthy food with less environmental impact makes biological solutions essential today.

Integrated pest management (IPM) is an 'ecosystem' approach that combines several methods to grow healthy crops with less pesticide.

A new, holistic IPM model, developed by US-based extension entomologist Dr Surendra K Dara, redefines IPM as an approach to 'managing pests in an economically viable, socially acceptable and environmentally safe manner'. It incorporates the farmer, seller and consumer.

The essence of the model, according to Dara, is that crop production is 'an art, science and business' and each grower should develop his or her own programme to grow crops. This means minimising loss and staying profitable in a way that is socially acceptable, safe for people, and environmentally sound.

The model is based on four pillars and will be unique to each grower:

- **Pest management**, a combination of cultural, physical, biological and chemical options;
- **Knowledge and resources**, which directly affect the farmer's decision-making;
- **Planning and organisation**, which involve successful in-field implementation;
- **Communication**, which must ensure the internal and external sharing of collective knowledge.

## BIOLOGICAL SOLUTIONS

As a new IPM paradigm evolves, so does the role of biological solutions. Today's consumer demands healthy food production, putting farmers under pressure to produce ecologically sound, nutrient-dense food, while protecting the environment.

Those implementing an IPM approach can meet this demand by adopting biological solutions, such as biological pest and disease control products, biostimulants and microbial soil inoculants. All of these contribute to healthy crop production while reducing environmental impact.

## A NEW EMPHASIS: BIOLOGICALS FIRST

Traditionally, IPM programmes stress maximum use of chemicals while meeting maximum residue levels (MRLs). But Madumbi, a South African distributor of bioproducts, believes a paradigm shift is needed: biological and non-chemical solutions should be incorporated first and utilised fully, with chemical solutions then completing the programme.

"The basket of biological solutions is growing and getting more diverse, and the

**BELOW:** Entomologist Dr Surendra K Dara's integrated pest management model balances the needs of farmers, retailers and consumers. It also recognises the economic realities of applying environmentally sound solutions. SUPPLIED



opportunity for biologicals to take centre stage in IPM programmes has increased, encouraging reduced dependence on chemicals," says Dr Brendon Neumann, head of Madumbi Business Innovations.

## NATURAL, LOW-IMPACT PEST CONTROL

Biological control involves using predators to control a pest. These include parasitoids, predators, entomopathogenic nematodes and competing micro-organisms.

Each biological solution is unique, with specific features and benefits. These include:

- Multiple modes of action, high efficacy, and low risk of resistance build-up;
- Effective resistance management with conventional chemicals in IPM programmes;
- Low to no impact on beneficial insect populations;
- No MRLs;
- Compatible, user-friendly products that can often be incorporated into tank mixes;
- Chilled storage and improved logistics offering long shelf life;
- Natural products, several of which are certified for use in organic production.

Proven over the past 20 years, modern biological solutions are better than ever, making them ideal for today's 'IPM toolkit'.

- *Sources: Dr Surendra Dara. 2018.*

*'The new IPM paradigm for the modern ages and the growing world population'. Retrieved from the E-journal of Entomology and Biologicals.*

- *Baker, B, Green, T and Loker A. 2019. 'Biological control and integrated pest management in organic and conventional systems'. Retrieved from Biological Control, ScienceDirect.com.*

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