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The bottom of the container is filled with soapy water. Males are attracted to the lure and drown in the water. The traps can capture large numbers of males, i.e. over 200 males ha^{-1} day^{-1}, depending on the local population (Photo B). Generally, **four traps per hectare can capture enough males to drastically reduce mating and thus oviposition, thereby reducing or eliminating the need for insecticides for FAW control**. The cost of pheromone traps and insecticides is similar, but pheromones have no negative effect on non-target species or farmers' health. The drawbacks include the need to change the water frequently, which is labor intensive, the fact that pheromone traps are highly specific and do not control other pest species, and the lack of pheromone availability on the local market. CIMMYT partnered with INIFAP—the Mexican national research institute that developed the practice—to implement agroecological pest management in collaborative trials. **The traps have therefore now been implemented successfully across Mexico and also tested in Zimbabwe.** This is a safe, economical and environment-friendly method for FAW control, that is suitable for smallholder farmers.

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▲ *Photo B. Massive capture of male* Spodoptera frugiperda *adults in Indaparapeo, Michoacán.* © *F. Bahena*

Insect nets to facilitate the agroecological transition in Africa

Vegetable production in sub-Saharan Africa is booming to feed the growing population, yet there is still widespread reliance on intensive chemical control. How can crop yields be increased without reliance on chemical inputs while promoting agroecology? Technology transfer and adoption of affordable low-tech techniques, such as the use of insect nets, could meet this challenge and reduce insecticide treatments. Research in Benin, Tanzania and Kenya has shown that insect nets are easy to use and protect plants against large pests and extreme climatic conditions. Growing crops such as tomato, beans, cabbage, pepper, etc., under these nets helps reduce pest attacks, especially those responsible for direct damage to fruits or leaves, including birds, snails, locusts, caterpillars and flies. Yet these nets do not completely protect crops against phloem-feeding pests such as aphids, whiteflies, thrips and mites, some of which can transmit viruses. The confined environment under nets nevertheless facilitates biological control of these pests and pollination by bees from beehives with two openings that provide access inside and outside the nethouse. **This technique thus enables farmers to drastically reduce pesticide use, while also mitigating the effects of extreme climatic conditions** such as high solar radiation, heavy rains and dry winds. Shade nets decrease heat stress during the dry season and a plastic roof can further reduce the risk of fungal diseases during the rainy season. Hence, insect nets help extend the production period, increase crop yields and improve the quality in terms of organoleptic features and lower pesticide residues. Protected cultivation techniques are often criticized because of the use of plastic. However, the insect net can be recycled and the increased efficiency in agricultural input usage would offset the negative impacts, as suggested by life-cycle assessments. Farmers' low investment capacity hampers their adoption of this insect net technology despite the fact that cost-effectiveness analyses have shown that nets help offset variations in crop yield and therefore in farmers' incomes. They help stabilize cash flows, reduce production volatility and quality variations. The use of insect nets thereby enhances farmers' long-term vision by reducing the risks, allowing them to make medium-term investments at lower risk.

▲ *High tunnels with 0.9 mm nets on each side and plastic roof with shade nets adapted to humid and hot climatic conditions in Arusha, Tanzania.* © *T. Nordey*

▲ *Organic tomato production under insect nets in Nairobi area, Kenya.* © *T. Martin*

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• Eco-friendly nets 2. A profitable climate smart agriculture technology (video): www.youtube.com/watch?v=Y6Ri6SuWTqk

• Eco-friendly nets to avoid the use of pesticides (video): www.youtube.com/watch?v=Vb-Ewrq42II