# CHAPTER 7.1.

# IMPACT OF SCREWWORM ERADICATION PROGRAMMES USING THE STERILE INSECT TECHNIQUE

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## SUMMARY

The use of the sterile insect technique (SIT) in New World screwworm *Cochliomyia hominivorax* (Coquerel) eradication programmes has been successfully demonstrated. As a result of a 45-year area-wide campaign, suppression and eradication have been achieved in the USA, Mexico, Belize, Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, Panama north of the Canal, some Caribbean Islands, and the outbreak in Libya, North Africa. The humans, livestock, and wildlife in these countries are now free of this dangerous pest. It has been estimated that the annual producer benefits are: USA – USD 796 million, Mexico – USD 292 million, and Central America – USD 77.9 million. In Libya, the estimated benefit/cost ratio was 5:1 in the infested zone, and 10:1 in the whole country. If the New World screwworm were eradicated in South America, it has been estimated that each year USD 3592 million could be saved. Small field trials have confirmed that the SIT would be effective for the area-wide control of the Old World screwworm *Chrysomya bezziana* (Villeneuve).

## 1. INTRODUCTION

The application of the sterile insect technique (SIT), as part of an area-wide integrated pest management (AW-IPM) approach for the suppression and eradication of the New World screwworm *Cochliomyia hominivorax* (Coquerel), has been comprehensively demonstrated (Klassen and Curtis, this volume). The similar biology of the New World screwworm and the Old World screwworm *Chrysomya bezziana* (Villeneuve) indicates that the SIT should also be effective against the Old World screwworm. Field trials in Papua New Guinea provided strong indications that the SIT would be effective in suppressing the Old World screwworm (Spradbery 1990, Spradbery et al. 1989), but were not conclusive, although more recent studies in Malaysia have provided validation of the SIT for this screwworm species (R. J. Mahon, unpublished data).

Today, animal production is a high priority in world agriculture. There is an increasing demand for meat, dairy and egg production — major sources of animal protein for the world's growing population. To satisfy this demand, a diversity of livestock production systems is found in the different continents, including keeping cattle, buffaloes, sheep, goats, hogs, and poultry on traditional smallholder farms, and in extensive grazing or in more intensive systems, depending on the local circumstances.

In developing countries, animal production makes a major contribution to local and national food supplies. This production provides food security, cash income to a large number of rural people, and benefits to the whole economy. Commercial livestock-keeping increases total farm produce and income, provides year-round employment, and reduces the investment risk of raising livestock. Income from livestock products provides funds to purchase additional means to improve crops, or for other farm investment. Livestock production enhances the economic viability and sustainability of the farming system (FAO 1992).

Predictions made by the International Food Policy Research Institute (IFPRI), International Livestock Research Institute (ILRI), and Food and Agriculture Organization of the United Nations (FAO), suggest that, between 1993 and 2020, total world meat consumption will double from 180 to 300 million tonnes, and milk production will increase from 400 to 650 million tonnes (Delgado et al. 1999). To satisfy this growing demand, the world must find mechanisms to develop greater