



RESEARCH NOTE

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Plague Locust Threat to Australian Agriculture

Introduction

Throughout this year the Australian Plague Locust Commission (APLC) (funded by the Federal, NSW, Victorian, South Australian and Queensland Governments) has issued bulletins warning of a potential plague locust disaster for Australian agriculture this Spring.

These warnings have alerted farmers and government to the need to identify and monitor risk areas in the months leading up to the locust hatching season from September to November. Grain crops are particularly at risk.

The APLC predicts a major outbreak of plague locusts representing significant threats to grain crops in large areas of NSW, South Australia and parts of Victoria. Queensland is rated a moderate risk (see map over page). The Agriculture Protection Board in Western Australia has identified and been monitoring potentially massive outbreaks of locust activity from Moora to Esperance.

Major locust outbreaks causing damage to crops were recorded in Western Australia in 1990, in western NSW in 1992 and in parts of South Australia in 1992, 1993 and 1997. This current locust threat is envisaged to be considerably worse than these. Current crop damage estimates are difficult to forecast but Agriculture WA says that potential damage in that state alone could be up to \$200 million without control measures.

The hatching season usually begins in September in warmer areas (northern South Australia and north-western NSW) through to late October in cooler areas (south-east NSW and Victoria). Egg hatchings in Western Australia are expected to accelerate in early October.

Plague Locusts

The Australian plague locust (*Chortoicetes terminifera*) is one of three major locust pests in Australia. The plague locust is the most recurring and potentially damaging of the three. The other two are the spur-throated locust (*Austracis guttulosa*) and the migratory locust (*Locusta migratoria*). Locust outbreaks occur from time to time across Australia depending on climatic factors.

Outbreaks of plague locusts often originate in semi-arid and arid zones of Australia. During Summer 1999-2000 and Autumn 2000 these areas received exceptional rainfall that allowed locust levels to build up to plague proportions and provided ideal conditions for the laying of the eggs, despite control measures.

Plague locust eggs laid in Autumn lie dormant in the resting stage through Winter. Hatchings begin when moisture and temperature conditions are right in the Spring.

It takes from 4 to 6 weeks for locust nymphs to reach fledging stage and another 2 weeks to adult maturation enabling migratory flight.

The main danger to agriculture occurs where crops are still green. Crop damage from bands of nymphs and migratory locusts can be significant. Even crops approaching ripeness can be attacked, particularly in the small green area below the grain head just prior to the readiness for harvesting.

During daytime, plague locusts may feed and migrate up to a distance of 10-20 kilometres. At night they may fly hundreds of kilometres depending on wind conditions. Predicting where and how far locust swarms will migrate to is uncertain.

The Australian Plague

Locust Commission (APLC)

The APLC was established in 1974 and became operational in 1976 to co-ordinate the monitoring and control of plague locusts, including the spur-throated and migratory locusts, considered a threat to interstate rural industries, although the APLC may be invited to assist if requested. Western Australia and Tasmania are not APLC members.

The APLC is funded and comprised of the Commonwealth Government (50 per cent) and the governments of NSW (32.5 per cent), Victoria (10 per cent), South Australia (5 per cent) and Queensland (2.5 per cent).

The 1999-2000 budget allocation for APLC was \$3.14 million.

The main functions of the APLC are preventative control using chemical sprays, monitoring and forecasting in contributor states where interstate migrations are likely to occur.

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Preventative Control

Preventative control aims to control locust populations before they reach outbreak levels and includes the monitoring, forecasting and treatment of infested areas. The main control agent is a chemical insecticide, principally *fenitrothion*. The optimum time to spray is about a fortnight after hatching when locust *nymphs* aggregate into dense bands. Chemical spraying that targets adult locusts in aerial swarms may occur at a later stage depending on location and environmental limitations. Locust bands and swarms in pastoral areas are easier to aerial spray because of reduced limitations.

APLC research in conjunction with the CSIRO has looked at biological locust control using a naturally occurring fungus that will be tested this season in some sensitive areas.

Monitoring and Forecasting

Monitoring is by ground surveys in Eastern Australia and by reporting of locust activity by farmers and agricultural field officers. Long distance migrations are recorded by eight light traps in Eastern Australia. The light traps attract locust numbers and estimates are made on the size of the swarms. The light traps are located in Oodnadatta and Dulkannina in South Australia, at Fowlers Gap and White Cliffs in NSW, and at Nooyeah Downs, Birdsville, Julia Creek, and Longreach in Queensland.

Forecasting possible locust plague locations and monitoring developments are important for preventative control. Locust surveys and reports, meteorological data and quantitative modelling are used by APLC in a computerised Decision Support System.

Current Control Activities

Landholders are largely responsible for locust control on their own properties using ground control equipment. Local councils and farmer groups often work together to organise some control measures.

The APLC will target high-risk areas for aerial spraying of plague locusts across member states to limit potential interstate migrations.

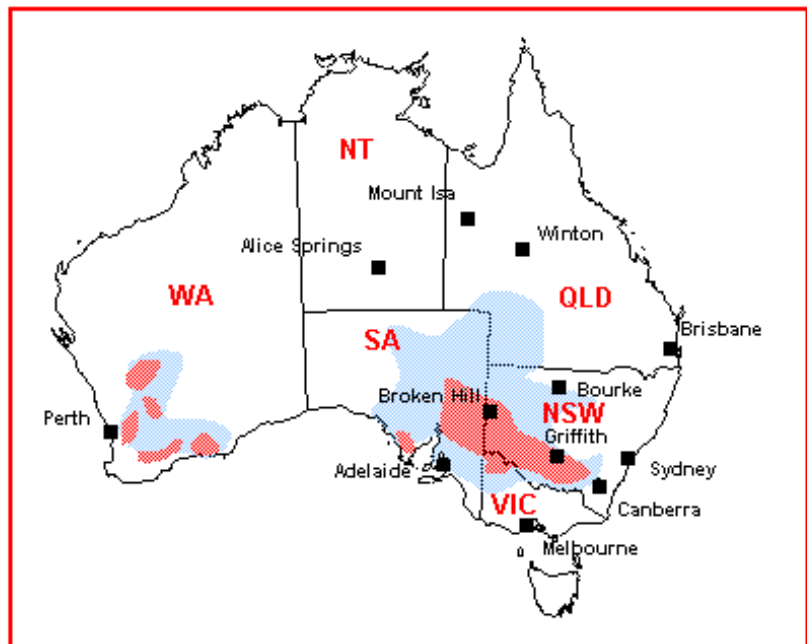
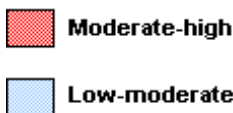
Government Responses

The Federal Government provides half the total funding for the Australian Plague Locust Commission within the Department of Agriculture, Fisheries and Forestry. Commonwealth funding for 1999–2000 was \$1.6 million.

North-west Victoria is a high risk area. The Victorian Government pledged an additional \$1 million on September 13 to fund aerial spraying. The risk of locust migrations from NSW and South Australia is a significant danger.

The South Australian Government has allocated \$6 million for the 2000 Locust Control Program. In addition, local councils will be reimbursed up to 95 per cent from the South Australian Local Government Disaster Fund to help defray locust control costs. In August the State Government announced a \$1 per hectare rebate scheme for farmers using approved and certified chemicals for locust control.

Expected scale of spring hatchings



The NSW Department of Agriculture and the Rural Lands Protection Board assist in plague locust control. Chemicals have been made available to farmers and financed from levies to the Noxious Insect Destruction Account. Aerial spraying by APLC and landholders has already begun in western NSW.

Queensland's Department of Natural Resources is monitoring the south-west of the state where a moderate risk has been forecast.

Agriculture WA has a Locust Response Plan and, with farmers, is gearing up for a \$30 million campaign over 2 million hectares.

Conclusion

A significant threat to crop production exists from plague locusts in the coming months although chemical spraying and crop maturity may mitigate disaster.

(Map used with permission from APLC from their website at: <http://www.affa.gov.au/aplc>)