INSECT PROBLEMS IN THE WANGANUI DISTRICT

A. K. BOOTH

Department of Agriculture, Wanganui

Summary

Insect damage to pastures and crops in the Wanganui District is confined to the flat and easy rolling country. Grass-grub (*Costelytra zealandica*) is prevalent on the free-draining sandy and volcanic ash soils and some damage to pastures is also done by the subterranean grass caterpillar (*Oxycanus* spp.) and the stem weevil (*Hyperodes bonariensis*). Insect pests in crops are a major problem. Cutworms and white butterfly (*Pieris rapae*) damage swedes and choumoellier crops; armyworm (*Pseudaletia separata*) is rife in most semi-mature barley crops and potato yields can be severely reduced by potato moth (*Gnorimoschema operculella*) and wireworm. Apart from the direct damage to crops, aphids are instrumental in spreading serious virus diseases such as turnip and cauliflower mosaics in swedes and turnips, yellow dwarf virus in cereals, and leaf roll in potatoes.

INTRODUCTION

A VERY EXTENSIVE range of soils, contour, climatic conditions and types of farming exist in the Wanganui district which is bounded in the south by the sea and a wide belt of coastal sand country. Beyond this there is the intensively farmed flat and rolling country of the Hunterville, Marton, Wanganui and Waverley areas where production of export lamb and mixed cropping are carried out together with beef cattle and dairying. Further north is a vast area of hill country, ranging from some of the best soils derived from mudstone (papa) about Taihape to some of the worst sandstone country in the northern part of the Waitotara and Patea counties and the north-western part of the Waimarino county. Much of this latter area has reverted to scrub and a considerable area abandoned altogether. The northern part of the district includes much of the central plateau of volcanic soils running from 1,600 to 2,600 ft from Raetihi, Ohakune to Waiouru, with some areas of tussock country further back in the north-east rising to over 3,000 ft.

On large areas of the second-class hill country where extensive programmes have to be undertaken to control scrub (*Leptospermum* spp.), gorse (*Ulex europaeus*), or variegated thistle (*Silybum marianum*), any added cost for insect control would be a crippling blow. It is fortunate that the insect problems in the Wanganui district are virtually confined to the flat and easy rolling country where the cost of applying insecticides can be recouped. The control of insect pests can be divided into two main categories — those affecting pastures, and those affecting crops.

PASTURES

GRASS-GRUB (*Costelytra zealandica*)

Grass-grub has been a problem in the district for twenty years and is prevalent on all the free-draining soils. These consist of the Tongariro and Taupo ash soils of the Waimarino and Waiouru areas, the light stony alluvial soils of the Rangitikei River valley, the higher terrace soils of volcanic origin near Hunterville, the

dry coastal sand country, and the heavier Egmont ash soil from Wanganui to Waverley.

The first trial work carried out in the district for grass-grub control was at Raetihi in October, 1948. The materials used were 50% DDT at 4 lb per ac and 10% BHC at 20 lb per ac. Both these materials gave excellent control of the grass-grub and the effects were still evident six years after the initial applications. In 1949 an unsuccessful attempt was made to establish a grass-grub parasite.

DDT has given good control of grass-grub in the district. Although some failures have been investigated they have in most cases been the direct result of faulty application.

SUBTERRANEAN GRASS CATERPILLAR (*Oxycanus* spp.)

The subterranean grass caterpillar is not an overall problem in the district although it has been responsible for some quite serious pasture damage at times. Its activity has been confined to some of the heavier soils and there was one quite extensive outbreak in the lower Rangitikei. In general it has not shown up to any extent on the country that is susceptible to grass-grub. As the outbreaks are spasmodic it is not economic to apply any preventive treatments.

STEM WEEVIL (*Hyperodes bonariensis*)

The larvae of stem weevils have caused serious damage to many stands of short-rotation ryegrass. The extent to which it has been responsible for depleting short-rotation ryegrass establishments in the district is difficult to assess. Dry conditions and close grazing during the summer months also take a considerable toll of short-rotation ryegrass.

ARMYWORM (*Pseudaletia separata*)

Armyworms have not been any real problem in pasture in the Wanganui district.

Minor migrations from infested cereal crops to adjacent paddocks have been occasionally reported.

CROPS

The effect of insect pests on crops is a major problem in the district. With the wide range of supplementary feed and cash cropping carried out in the area, the problems are many. There is a growing awareness among farmers that the control of crop damaging pests is essential for economic cropping under the present high cost structure.

CEREALS:

ARMYWORM and APHIDS are the two main insect pests of cereal crops. Armyworms have shown up to serious proportions on oat crops from early December onwards but the most seriously affected crop is barley at the mature or semi-mature stage. Most crops are sprayed from the air and overall, little difficulty is experienced in obtaining a good kill. There have been many instances where unsprayed crops have had yields reduced by 50 to 90% and at times the damage has been done within two days of harvest.

Since 1959 barley yellow dwarf virus has become a problem in barley and wheat crops. This disease is spread by the winged forms of the CEREAL APHID (*Rhopalosiphum padi*). Barley yellow dwarf virus causes a serious check in plant growth and a corresponding reduction in grain yield. At the present time the control of this disease is achieved by timely applications of a suitable systemic insecticide to kill the aphids. In the last two years there have been many light aphid infections that have not warranted expensive spraying. As barley yellow dwarf virus did not show up at a later

stage, the aphids were either not infected with the disease or the aphids carrying infection were not present in sufficient numbers to affect the crops. Much bigger losses in wheat crops have been caused by stem rust and further developments in the production of rust-resistant varieties or the economical control of stem rust in the field will be watched with interest and anticipation by wheat growers in the district.

POTATOES

The Rangitikei is one of the well-known potato growing districts in New Zealand and is at present growing about 1,600 acres for the North Island market. The basic price in the last two years has been from £15 to £22 per ton for table potatoes and growers have realized the necessity of adequate pest and disease control to ensure the maximum yields of marketable potatoes. Two ways in which potato growers can meet these problems are by ensuring that the seed sown is disease-free and by taking all precautions to maintain their crops free from disease and insect pests throughout the season.

APHIDS are instrumental in spreading some serious virus diseases through potato crops.

The most important of these is the leaf roll virus which causes heavy reductions in yield. Moreover the infected plants, by producing mostly seed sized potatoes, provide a very high percentage of infected seed for the following year. Seed certification has developed to a high standard in the district over the past few years and some of the growers have been meticulous in their spraying programmes to control aphids. It has been necessary to use a systemic insecticide to obtain control and demeton-S-methyl has been used mainly at three-week intervals from November to January. There is considerable interest in the development of systemic materials in the form of dusts and granules which are applied at planting time and taken up through the roots to give adequate control for up to ten weeks after planting.

POTATO TUBER MOTH (*Gnorimoschema operculella*) can become a serious problem and while there is a small amount in the district most seasons, it has only developed to serious proportions about once every five years. An extensive survey of potato moth damage was carried out in the Rangitikei in 1957. That year up to 80% of the crops were affected with a loss of 5 tons per acre in some cases. In many crops there was inadequate soil cover to prevent the entry of the moths through the side and top of the mounds. Better moulding has helped overcome the problem and this has been attained in many cases by increasing the distance between rows. In some parts of the district, where trouble is expected every year, the regular use of insecticides from December onwards has proved quite satisfactory in controlling potato moth.

WIREWORM has occasionally caused serious losses in potatoes. Where wireworm infestation has been expected good control has been obtained by using aldrin superphosphate with the seed at planting time.

CRUCIFEROUS CROPS

Supplementary feed crops are a very important adjunct to farming throughout the Wanganui district. Soft turnips or choumoellier are grown for the dry summer and autumn period on many sheep and dairy farms while choumoellier or swedes are used to supplement the winter feed supply. Insect pest damage has increased considerably in recent years and to grow payable crops it is becoming more and more essential that this damage be kept to a minimum.

CUTWORMS have eaten out many crops of swedes, choumoellier and turnips in the first two to three weeks after germination. The control of cutworms is not difficult with insecticides but in many cases the damage is already done before any attention is drawn to it. The habit of cutworms hiding beneath clods and debris during the daylight makes them difficult for the inexperienced eye to find.

WHITE BUTTERFLY (*Pieris rapae*) causes severe loss of leaf in cruciferous crops and it is probably more severe on choumoellier than the other crops. While the recovery of choumoellier after white butterfly damage is often quite remarkable there is a critical stage when it would pay to treat some winter crops of swedes and choumoellier with insecticide.

APHIDS are now a problem in the lower parts of the district every year. Aphids retard the growth of swedes, turnips and choumoellier by sucking the sap from these plants. They are also responsible for the spread of turnip mosaic and cauliflower mosaic diseases in swede and turnip crops. These virus diseases have increased markedly in the last few years and the overall effects of aphids have made it necessary to spray many crops. As the heaviest aphid infestation is mostly on the underside of the leaves which are badly curled under, it is virtually impossible to gain good control with a contact spray material. Apart from the development and use of aphid resistant varieties the future of aphid control in cruciferous crops appears to be in the use of systemic insecticides.

CONCLUSION

Large areas of grassland and crops in New Zealand suffer from the ravages of insect pests. Provided the infestation is arrested at the early stages the cost of controlling these insect pests is only a relatively small percentage of the added value of the grass or crop. Consideration must always be given to the economics of insect control. There are also many cases where the expense of treatment is not warranted because there are insufficient numbers of insects to cause any problem or the damage is so severe that no benefits could be derived from their control.