NZAEI NEWS

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EDITORIAL

We will be pleased to receive any comments relating to the contents of our Newsletters or on the work the Institute is doing. Write to:

The Information Officer
NZAEI
Lincoln College
Canterbury

The Information Officer will also handle address changes and requests for the Newsletter or other NZAEI publications.

CULTIVATION

Intermittent, but heavy rain during June delayed the completion of the winter economy of cultivation trial. Ploughing was done on 9 June, but secondary cultivation and drilling were held over until 27 July. The trial using 50m x 12m plots sets out to examine fuel, man, and machine inputs for a range of PTO powered secondary cultivation equipment. The Gallagher Power Harrow, Howard Spike Rotor and Lely Roterra have been compared with the NZAEI Dutch Harrow, using our Ford 7700 70 kw tractor for motive power.

HAY HANDLING

Two visits have been made to the round bale hay weathering trial at Hari Hari in Westland. Of the three bales in the trial the one with the impervious plastic cover has weathered best so far. There is little damage and the hay bale has slumped less than the other two. There was not much difference in appearance and rain penetration between the uncovered bale and the one covered with the woven plastic sheet. Rainfall in Hari Hari village for the four months, February to May, was 1810 mm.

HARVESTING

Raspberries

Several raspberry growers are planting on the Lincoln canopy system this winter and will start mechanised harvesting in 1979/80.

As another harvester is being built the opportunity is being taken to incorporate a number of improvements. However, the basic design, which has proved successful, will not be changed.

Apples

The design of a machine for the continuous removal and collection of apples from the canopy system is under consideration.

Tomatoes

The tomato harvester is now awaiting conversion to an experimental electric drive system. The present conventional hydraulic drive works well but there may be advantages in applying electric drive, not only to the tomato harvester, but also to other trailed, semi-trailed and mounted implements. The tomato harvester is to be used as a test bed for the initial investigation.

DRAINAGE

The Field Drainage Guide is now available.

This publication is intended as a guide to practical drainage work and should prove useful to both farmers and contractors. It can be purchased from the Institute. Price $2.50.

WASTE MANAGEMENT

Two water-wheel samplers have been built and subsequently modified to improve their ability to ride over obstacles in the channels. A sample splitter has also been constructed. This will reduce the sample volume collected.

As the result of a request from the Interdepartmental Committee on Land Application of Wastes the Institute is considering ways of establishing and, if necessary, reducing the health risks from aerosols generated by various effluent spraying devices.

ETHANOL PRODUCTION FROM CROPS

In conjunction with the College Microbiology Department Carl Henderson has been working on continuous ethanol fermentation in an advanced tower fermentor using a flocculating yeast. A 6 litre tower fermentor has been built and hydraulically tested and analytical techniques for sugars, ethanol and yeast cells are being developed. Studies with a 0.2 litre tower fermentor have given promising results but have emphasised the inadequacy of laboratory scale work. There is an immediate need for extraction facilities more representative of industrial conditions and capable of producing up to 50 litres a day of beet juice to run the 6 litre fermentor.

AGRICULTURAL AVIATION

Arrangements have been made to acquire a hopper and outlet as fitted to aircraft. This will be used in lime-dumping trials. These trials are part of a study of the emergency jettisoning of lime from agricultural aircraft which has been requested.

FENCING

A rig for carrying out accelerated corrosion tests has been built. Pinewood blocks, treated with different preservatives and with various wire types attached, are suspended in a tank in a humid atmosphere. In this way any corrosion which may be induced on the wire will be accelerated. The tests on the new alkylammonium compounds provided by the Forest Research Institute will be of particular interest. Other preservatives to be tested include Tanalith NCA, Pentachlorolphenol and Celane K33, samples of which are being provided by the Timber Preservation Authority. A selection of treated samples of timber are to be given to the Engineering School at Ilam for a study of the effects of timber preservatives on aluminium. Arrangements are being made with the Forest Research Institute for the supply of fence posts protected by new treatments for inclusion in the eight main durability trials throughout both islands.

The Institute is to test fencing components and examine methods of electric fence construction. At present attention is focussed on insulators and the construction of a high voltage source for testing the effectiveness of insulators has started.

IRRIGATION

Modifications have been made to the auxiliary drive units of the 'Wheel' irrigator to reduce slipping which was causing poor alignment of the sprayline. Prototypes have been developed of two types of sprinkler-fitting suitable for use with the continuously rotating irrigation pipe.

Initial results obtained from the capacitive method of measuring soil moisture using a pulse delay technique show promise. Field work on this project will continue through the spring and early summer.

FLUIDISED BED SEED CLEANING

The auger system for returning the seed so that continuous running can be achieved has been completed. The machine has been operated over a range of seed flows and air pressures. Trials are continuing to assess the possible commercial potential of the system.

PROTECTIVE FRAME AND CAB TESTING

During the period eleven tests were conducted of which only four were successful.

In May the Director attended an international symposium on "Engineering of Tractor Protective Structures" held by the National Institute of Agricultural Engineering in the United Kingdom. Twenty countries were represented including Australia, Japan, South Africa and the United States.

HERE AND THERE

•The Institute Bale Buggy won a Production Class award for new machinery at the National Field Days at Hamilton in June. Versions of the machine are now being produced by six manufacturers in New Zealand and one in Australia.

•Technical advice is being given to the Riccarton Bush Trust Board on aspects of drainage on the reserve and on irrigation methods for establishing seedlings.

•Peter Carran is representing the Institute on the Working Group on Frost Protection set up by the National Water and Soil Conservation Authority. The group is to prepare a report on policy for promotion and financial assistance of frost protection schemes using water.

STAFF

Mr R J Young arrived from the United Kingdom in June to take up the position of Research Officer (Machinery).

Roger Young comes from a farming family in the United Kingdom. A mechanical engineer, he was working with Perkins Engines, U.K., mainly in diesel engine development before he accepted a post with the Institute. He brings valuable working knowledge of the U.K. manufacturing scene, together with useful insights into the development of agricultural equipment through Perkins' connections with Massey Ferguson.

Bev Atkinson left the Institute in June to take up the position of Secretary to the Principal of the College. Mrs S Seed has been appointed to the vacant position and commenced duties in August.

ESTABLISHING GRASS ON TUSSOCK COUNTRY

Last year we were told by Murray Stockdill, a Ministry of



Leighton Coutt's machine working in tussock country in the Headwaters of the Rakaia River. Rex Gibbs, of the Institute, is at the controls.

Agriculture and Fisheries Adviser at Palmerston, that a local farmer was using a new method to successfully introduce grasses into tussock country. The farmer, Mr Leighton Coutts, had modified a standard rotary hoe to cut slots in the soil 100 mm wide and 250 mm apart. Coulters, and a seed metering box driven by the depth wheel, had been mounted on the hoe from which seed and fertiliser were placed in the slots. After seeing some of the results of this method we decided to carry out more trials ourselves in conjunction with TGMLI.

Mr Coutt's machine was borrowed and overhauled at the Institute. Trial sites were arranged at the following sheep stations: Hunua, Mesopotamia, Hallrook, Streenalands, and Ruatanuhia. The last three Stations being in the Mackenzie Basin. The trials were completed in the late August and early September of 1977. Measurements of seedling establishment were made by the TGMLI in December 1977 and June 1978. The count showed that, in these trials, the Coutts machine successfully established more grass than either a disc drill or broadcasting, in spite of a lack of rainfall after sowing.

Another series of trials will be made this year using the Institute's Seedavator. The blade layout of the machine has been rearranged and disc followers and a seed box have been added. In these trials we will be looking for the degree of tilth required and at coulter design.

The trial sites this year are Hunua, the Land and Survey Survey Department Block at Okuku Pass, Clayton Station at Fairlie, and Holbrook and Haldon stations in the Mackenzie Basin. At Clayton and Haldon Stations the trials are being run in conjunction with the DSIR.