NZAEI NEWS

NO. 8 *An informal account of current activities* APRIL 1978

EDITORIAL

NZAEI News has now seen two years of publication. Judging by the comments made to us it serves a useful purpose. A surprising number of requests to be put on the mailing list have come from overseas. As a result of references in NZAEI News the demand for other Institute publications has increased. The research and development work we do has little value unless it is put into practice, and this can only happen if those who may be interested are informed. Correspondence arising from items in the Newsletter, or the work at the NZAEI, is always welcome. Write to:

The Information Officer
NZAEI
Lincoln College
Canterbury.

He will also deal with address changes and requests for the Newsletter or other NZAEI publications.

CULTIVATION

The comparison trials of four direct drilling methods for sowing cereals, laid down in October (News No. 7), were abandoned in November. Because of the very dry conditions germination was poor. The winter wheat also produced low yields from the plots cultivated by single-pass linked rotary cultivator and drill, or directly drilled. Conventional cultivation and drilling produced a crop that was less susceptible to the extremes of a very wet winter followed by a very dry summer.

HAY HANDLING

As storing round bales in the open at Hari Hari (annual rainfall 4000 mm) was reasonably successful we have set up a second trial. Two types of plastic 'rain caps' have been used; one completely impervious to moisture, and another, which allows the bale to breathe. One bale has been left unprotected. There will be a similar trial at Lincoln (annual rainfall 700 mm).

An intermediate sized round baler (New Holland 845) was lent to us for evaluation late in the haymaking season. It makes a bale 1.4 m in diameter and 1.4 m wide - equivalent to 10 to 12 conventional bales. In lucerne hay and ryegrass straw the work rate (with natural stops) was 13 bales per hour. Average bale weights were 390 kg for lucerne and 215 kg for ryegrass straw. In comparison a bale, 2 m in diameter and 1.5 m wide, produced by a conventional round baler in the same lucerne weighed 780 kg. Two of the smaller bales will fit across the deck of a truck and push in to meet the legal limits on vehicle width.

HARVESTING

Raspberries

The NZAEI prototype harvester worked through a fourth harvest without any significant difficulties or breakdowns.

Eight acres of raspberries in Tasmania were harvested using a machine manufactured and sent over last December by a Christchurch firm.

Tomatoes

The rebuilding of the prototype harvester is now complete and it will be in Hawkes Bay for trials during March and April. See the back page article.

AERIAL SPRAYING

Work on the fluorescent particle technique for tracing spray coverage is almost finished. The trial applications of 2,4,5-T plus a fluorescent marking dye to gorse have been completed. The coverage produced by the hand held atomiser has been assessed and the results are being written up.

FENCING

A trial fence at Mount Eyre near Lumsden was under snow for most of last winter and came through undamaged. The fence has both wooden and steel posts and used 2.5 mm diameter high tensile steel wire. This wire has had an undeservedly bad reputation for such use, possible stemming from the results of overstraining the wire.

One of the ten NZAEI durability trial sites, Mid Dome in Southland, effectively is also a high country site. On a recent visit some line wires were repaired; they had been broken by snow loading, although they were not corroded. Some rimmed steel wire samples were installed at the same time. Rimmed steel has a very low carbon content (akin to wrought iron) and a relatively low tensile strength but is expected to posess good resistance to corrosion.

EROSION

Work on erosion has fallen off now that the research contract with the Soil Conservation and Rivers Control Council has expired. Application of the research results to wind erosion control and improved cultivation practice will, however, continue.

GLENMARK SCHEME

The Glenmark water resources and irrigation scheme has been approved in principle by the Government. It is now subject to a farmer vote, final approval and the availability of finance. Arrangements have yet to be finalised for the supervision and construction of the scheme.

IRRIGATION AND DRAINAGE

Marvin Shearer, Extension Irrigation Specialist at Oregon State University, U.S.A., visited the Institute as well as several other parts of the country in January and February. He gave two seminars here which were well attended by both research and industry representatives. He also visited a 40 hectare area under trickle irrigation. The installation was designed by Ministry of Agriculture and Fisheries and Institute staff, and has been operating successfully since 1970.

WASTE MANAGEMENT

The floating suction pipe in the aerobic pond of the Lincoln College dairy farm waste management system has worked well. One has now been installed in the anaerobic pond. This should prevent semi-solid manure blocking the concrete pipe between pond and pump sump. Landscaping of the pond surroundings is in progress.

The performance monitoring previously carried out on a nearby dairy farm has now been transferred to the Lincoln College dairy farm. A new waterwheel-type sampler for the influent

to the anaerobic pond is being tried.

ETHANOL PRODUCTION FROM FARM CROPS

Preliminary work has begun to explore ways in which ethanol can be produced from farm crops. Other research groups in the country are investigating the production of ethanol from wood, methanol from crops and natural gas, and other methods of obtaining a transportable liquid fuel as a petroleum substitute or additive. Our work will be carried out in co-operation with the Lincoln College Microbiology Department and the Chemical Engineering Department at the University of Canterbury.

RECENT PUBLICATIONS

NZAEI INTERNAL REPORTS:

83. Factors affecting the efficiency of aerial spraying - a literature review. ($1.50)

92. Operation Manual for the Lincoln College Dairy Farm Waste Management System.

TEST REPORTS

T/64 Precision Plastics - 20 mm plastic sleeve valve with brass lever arm (10c)

PAPERS BY NZAEI STAFF

Steele, P.E. and Pratt, T.H. *Bale Buggy feeds out round ones.* Straight Furrow, 38 (4).

Steele, P.E. and Pratt, T.H. *Introducing the Bale Buggy.* N.Z. Farmer, 99 (1).

Garden, G.M. *Is your safety cab too noisy?* N.Z. Farmer, 99 (3).

Drysdale, A. *Many a muck'll make a muddle.* N.Z. Farmer, 98 (23).

HERE AND THERE

●Russell Horrell has returned from an assignment with the Ministry of Foreign Affairs in Tonga. He was engaged in training local tractor drivers in the use of farm machinery.

●There has been a change in workshop staff; Jim Chapman has gone to another job, and has been replaced by Stephen Anderson.

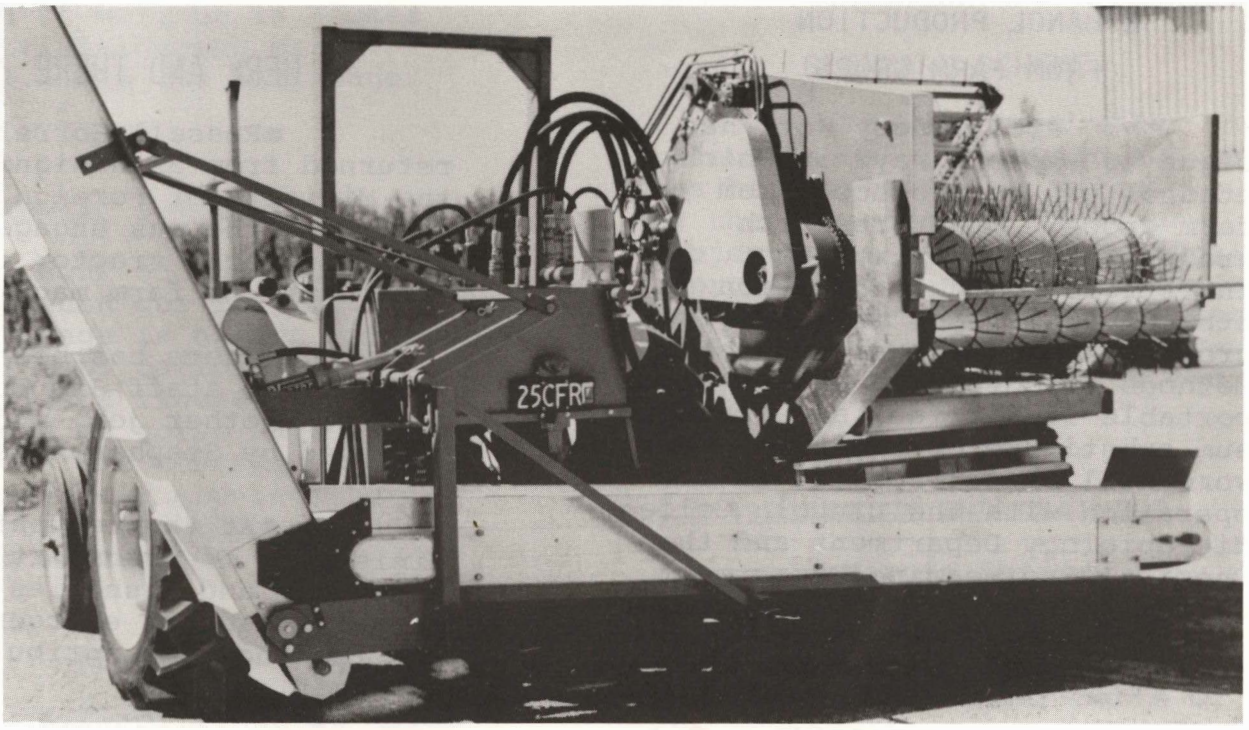
●At the request of the Ministries of Transport and Agriculture and Fisheries a study is being made of emergency lime jettisoning from agricultural aircraft.

THE N.Z.A.E.I. TOMATO HARVESTER

The N.Z.A.E.I. tomato harvester takes advantage of the shaker mechanism originally designed for our blackcurrant harvester and which was also used in a successful raspberry harvester.

The Institute became interested in tomato harvesting when it was evident that the lack of reasonably priced and suitable harvesting equipment could hamper the development of the crop.

Overseas machines are not designed with New Zealand conditions in mind. They have a high first cost and high maintenance costs. American models although superb examples of design are meant for large scale operation where the highest standard of fruit must be available straight from the machine. They require a crew of 20 and operate up to 300 or



A rear view of the harvester. The shaker fingers, onto which the haulm and fruit are dropped, can be seen on the left. The fruit falls into the conveyor and is carried to collecting bins. The hydraulic unit is mounted above the tractor P.T.O.

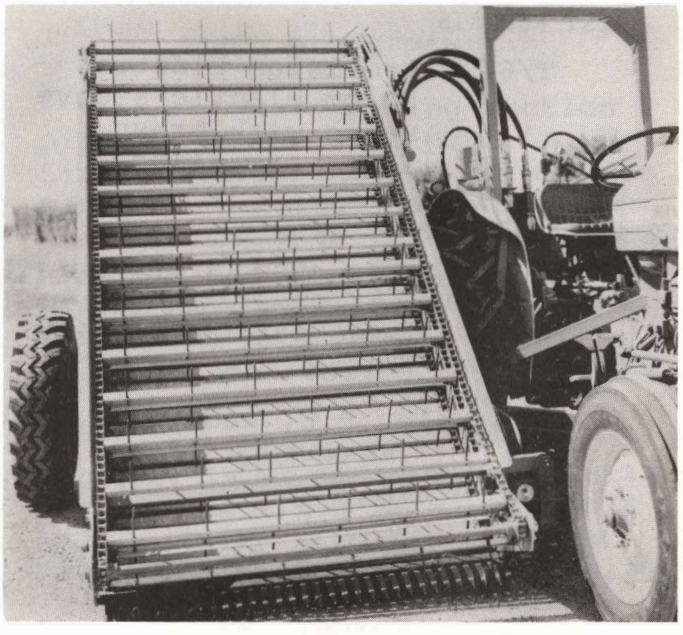
400 km from the processing centre.

A smaller machine, perhaps costing about a third less than the American machines, would suit New Zealand conditions better. As the fruit would be carried very short distances sorting, which is done on the machine overseas, can be left to the factory or packing shed.

Our machine attaches to a conventional tractor which provides both power and mobility. The tractor is available for other purposes as the harvester is easily dismounted. Power transmission from tractor to harvester is hydraulic. This has the advantage of flexibility.

In operation a sickle-bar mower cuts the haulm at ground level. The plant, with fruit, is elevated and then dropped onto shaker operated fingers. The fruit falls through an air blast to remove trash and is again elevated and passed to conventional collecting bins.

At present the machine is undergoing trials in the Hawkes Bay tomato growing area.



The pickup elevator of the tomato harvester. The sickle bar mower is visible at the bottom of the elevator.