NZAEI NEWS

NO. 17 *An informal account of current activities of the New Zealand Agricultural Engineering Institute* JUNE 1980.

NORTH ISLAND SUB-STATION



The first staff meeting of N.Z.A.E.I. engineers being held in John Maber's new office at Rukuhia, near Hamilton. Finishing touches, (such as walls and roof) should be completed soon. From left, to right, John Maber (Officer in Charge) Geoff Lawn, Keith Humphries, and Les Anstis.

The New Zealand Agricultural Engineering Institute is a national research and testing centre which was set up to support the farming industry.

The Institute is based at Lincoln College but a new station is now being established near Hamilton to provide better service for North Island agriculture. It has a staff of four engineers.

At the present time an office and laboratory block is being built at Rukuhia. This is to be followed by a project laboratory, due to be completed in July.

No sooner had the staff arrived than they were called upon to evaluate several new machines for the Development Finance Corporation and the Industrial Design Council.

One of these machines is an asparagus harvester which is being developed to assist with the greatly increased area of asparagus being grown in the Waikato.

One of the main areas of work will be in spraying. The new air blast sprayers are being studied to obtain more accurate control of droplet size, which should lead to large savings in chemicals used.

Keith Humphries, who is working with John Maber on these sprayers will be making a private trip to Europe in June. While in England he will be attending a course on spraying being held by the Cranfield Institute of Technology, and this should help the Institute to keep up to date with the latest trends in spraying.

NEW ZEALAND AGRICULTURAL FIELD DAYS EDITION

"FENCING FOR THE 1980's"



Interested spectators at the 'Fencing For The 1980's field days organised by Mr Geof Warren of the New Zealand Agricultural Engineering Institute, Lincoln College.

Let's try it every year now

Island?

The resounding success of the recent two-day 'Fencing for the Eighties' — a nicely balanced mix of lectures, working displays, demonstrations and exhibitions — showed it can be done.

Exhibition, display, seminar, field days . . . call it what you will. The name is immaterial. It's the efficiency of organisation, the quality of content, and the support and response of farmers and those who service them that counts.

'Fencing for the Eighties' — something of an experiment in its concept and scale — succeeded on all scores. It showed what could be achieved by thorough preparation and lively promotion.

Even the organisers were amazed when the dozen or so exhibitors they envisaged burgeoned to over 50. And the 1500-2000 farmers — the number of programmes uplifed is the only indicator of numbers — who came over the two days were not disappointed either. Indeed, many expressed surprise at just how much there was to see, hear and assess.

The exhibitors were happy too — largely becaus they felt everyone who came did s learn exactly wh s av le. have pron

" Southerner"
14th May 1980

This is one of the "rave reviews" that appeared in the press describing the fencing field days held at Lincoln College sponsored by "N.Z. Farmer" and organised by interested organisations, including NZAEI.

We think that that this review sums it all up rather well - especially the comment that the organisers were amazed at the support from exhibitors, and the interest shown by farmers. Very pleasing.

Research

Although all aspects of fencing are under consideration, the Institute is particularly interested in electric fences and the durability of fencing materials.

Test sites have been set up in 23 locations around the country, and work is expected to continue indefinitely.

Important areas of study are the useful lifetimes of different wires, treated wooden posts, and electric fence insulators.

THE LINCOLN CANOPY SYSTEM

. . And Now, Grapes.

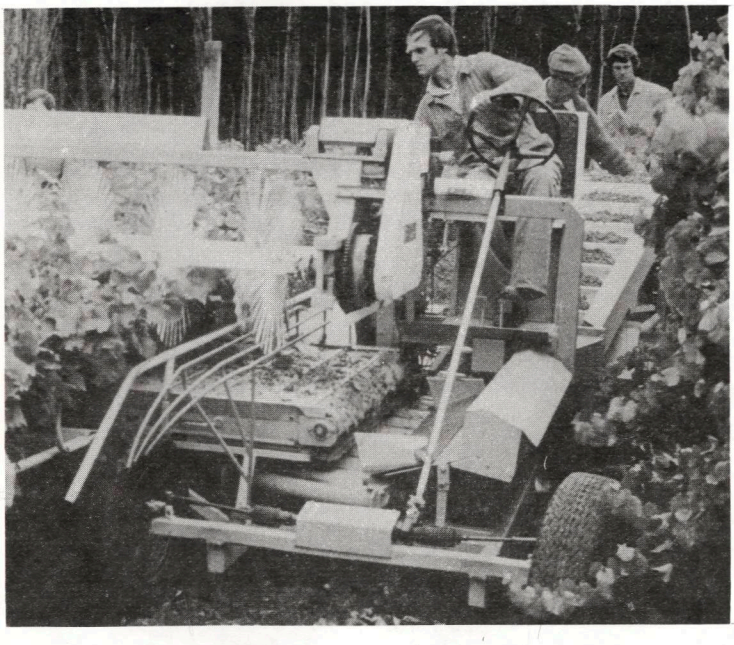
"Remarkable" was the work used to describe the performance of the Mark 1 raspberry harvester built by the N.Z.A.E.I., when it was tried recently on grapes grown experimentally on canopies at Lincoln.

One row of Gewurztramminer grapes had been trained to grow on the canopy, and in April they were ready for picking. The harvesting machine was driven into the row, and the vibrating finger wheels lowered onto the horizontally trained vines.

To everyone's delight the heavy load of fruit dropped onto the conveyor, leaving the vines stripped clean. Individual fruits were removed without stalks, bruising, or juicing.

Dr Jackson of the Lincoln College Horticultural Department estimated the yield to be 23 tonnes per hectare, at least double that of the conventional upright vines growing nearby.

The heavy yield was believed to be the result of the greatly increased number of buds which formed on the horizontal vines.



NZAEI Raspberry Harvester bringing in the grapes

THE MAN WHO CAN TALK TO TREES



John Dunn and Friend

John Dunn, Senior Principal Research Officer, is the "father" of the Lincoln canopy system of growing fruit trees and crops horizontally. He is not particularly interested in trendy electronic computer gadgetry, but does he know plants and crops and apple trees?

John has a rather unusual rapport with fruit trees, and because of his benign nature, he gets on well with (most) people too.

His only problem is caused by a piece of red pine 2" x 2" x 4'0" long, with the corners rounded off near one end. John calls it his "whacking stick", and it usually leans against the wall in a corner of his office as a silent and infuriating challenge to the mechanical engineering whizz kids.

That stick happens to be the world's best apple harvester, and when John uses it to hit the underside of the apple tree canopy, he is able to impart just the right force in the right direction to cause the apples to drop off perfectly.

Mechanical engineers have tried repeatedly to duplicate the action, but so far . . . . not quite.

Nobody laughs at John's stick any more. In a recent N.Z.A.E.I. publication it is no longer referred to as a "whacking stick", it now enjoys the title of "hand held impactor."

TRACTOR SAFETY FRAMES

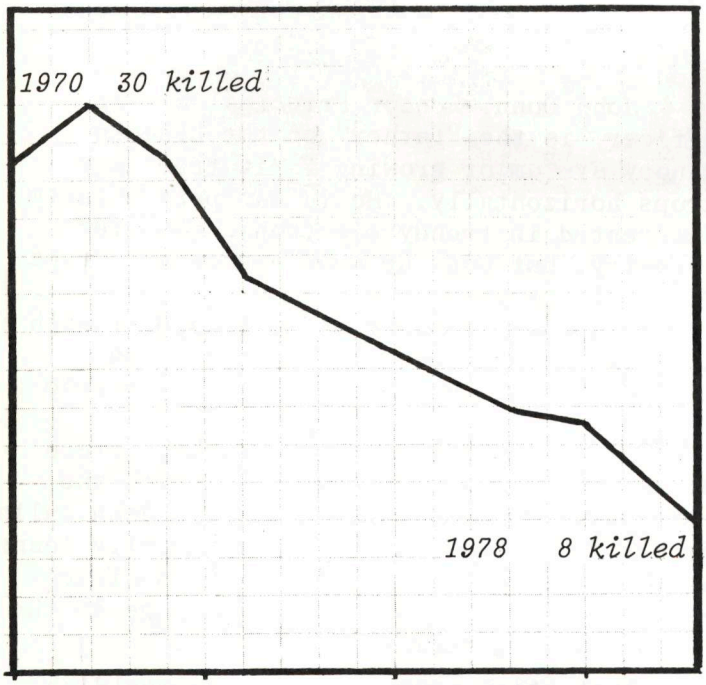
CUTTING DOWN THE CASUALTIES

Most fatalities resulting from tractor accidents are caused by the machine rolling sideways or rearing over backwards.

About half of these accidents occur when the tractor is on almost flat ground immediately before the accident, and many happen when being driven to or from work.

Most tractor accidents occur so quickly that the driver has no time to "bale out" and avoid being crushed by the overturning tractor.

New Zealand law now requires that all agricultural tractors sold new after 1967 must be fitted with approved safety frames or cabs.



This graph illustrates the deaths caused by rolling and rearing tractors.



The tractor tragedy.
A rarer sight today.

Since 1965 the N.Z.A.E.I. has been responsible for all safety frame testing done in this country, and in April the 400th test was completed at Lincoln.

This event passed almost unnoticed, but we think the results of all this work are rewarding enough to deserve a few words.

Since the introduction of safety frames there has been a marked reduction in the number of deaths from roll-over type accidents.

In 1970 there were 30 people killed.

In 1978 there were only 8 deaths, but SEVEN OF THESE WERE CAUSED BY TRACTORS WHICH WERE NOT FITTED WITH APPROVED SAFETY FRAMES.

If you would like to know more about any of the items appearing in the Newsletter, or on the work of the Institute, please write to:

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