NEW ZEALAND AGRICULTURAL ENGINEERING INSTITUTE

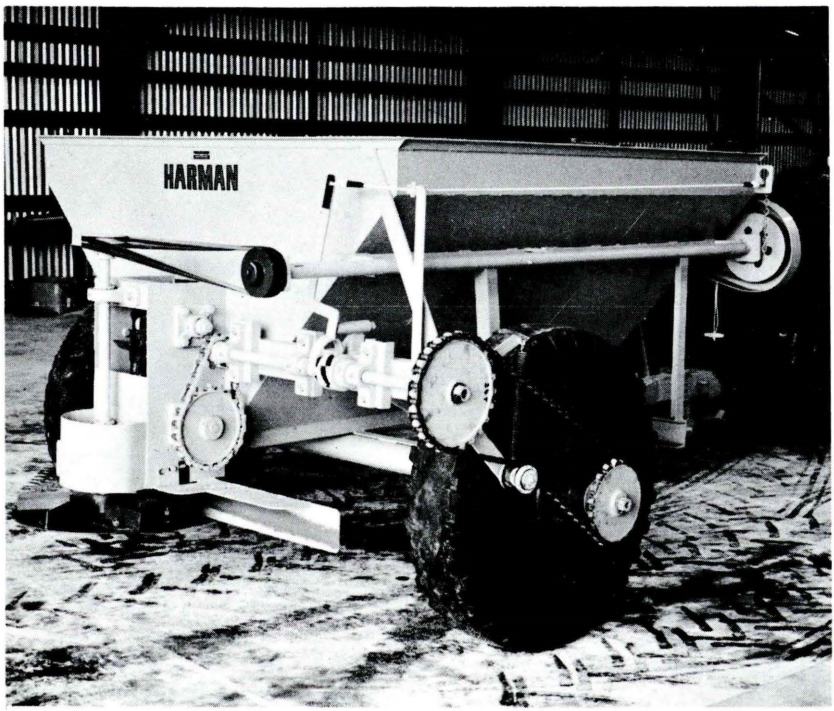
LINCOLN COLLEGE CANTERBURY NEW ZEALAND

Public

TEST REPORT NO. T/26

STILL AIR LABORATORY TEST ON THE UNIVERSAL COLT SPREADING GRANULATED SUPERPHOSPHATE

MANUFACTURER OF MACHINE: Harman Engineering Co. Ltd,
85-87 Harman Street, CHRISTCHURCH.



TEST PROCEDURE:

A full description of the test procedure and equipment is contained in Project Report P/6 to be issued by the New Zealand Agricultural Engineering Institute. In the interim see NZAEI Project Report P/5.

BRIEF DESCRIPTION OF THE MACHINE:

The Universal Colt is a spinning disc, trailed or truck mounted fertiliser distributor, the spinning disc being either P.T.O. or auxiliary motor driven.

Trailed machines are available in a range of hopper capacities from 30 cwt to 3 tons, while the truck mounted machines are usually made to a size to suit the carrying vehicle.

OVERALL DIMENSIONS OF THE MACHINE TESTED: Trailed, 2 ton hopper capacity.

Height 59" Width 96" Length 144" Rolling Radius of ground wheel 19 3/8"

SIEVE ANALYSIS OF THE MATERIAL:

B.S. Sieve No.	% by weight retained
3/16	5.8
1/8	28.8
6	9.5
8	22.0
12	13.5
16	5.9
22	4.5
30	2.8
Pan	7.2

BULK DENSITY OF THE MATERIAL:

Bulk density 78 lbs 9 oz per cubic foot

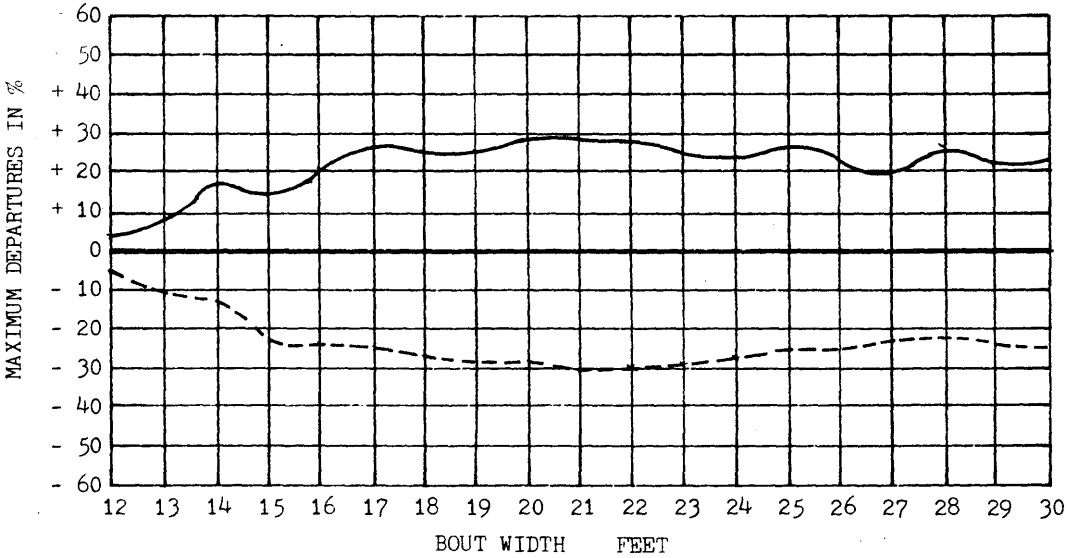
HOPPER OUTPUT OF MACHINE TESTED; At a ground speed of 5 m.p.h.

Number of Teeth on driving wheel	Number of Teeth on driven wheel	Position of slide	Wgt delivered per minute in lbs
8	46	Closed	28
8	46	3/8" above chain	35
8	46	1" above chain	48
8	46	2" above chain	56
11	46	Closed	37
11	46	1" above chain	64
11	46	2" above chain	74

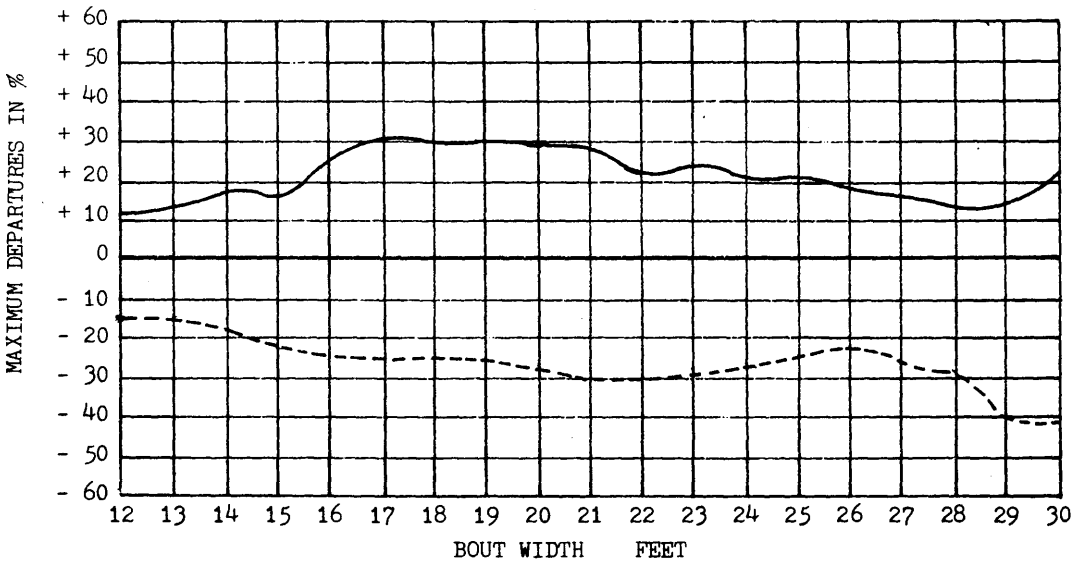
Opening the slide further than 2" above the delivery chain had no effect on the hopper output.

MAXIMUM DEPARTURES FROM THE MEAN APPLICATION RATE OVER A SELECTED RANGE OF BOUT WIDTHS

Mode of Travel: Round & Round
Above mean rate: ——•——
Below mean rate: -------



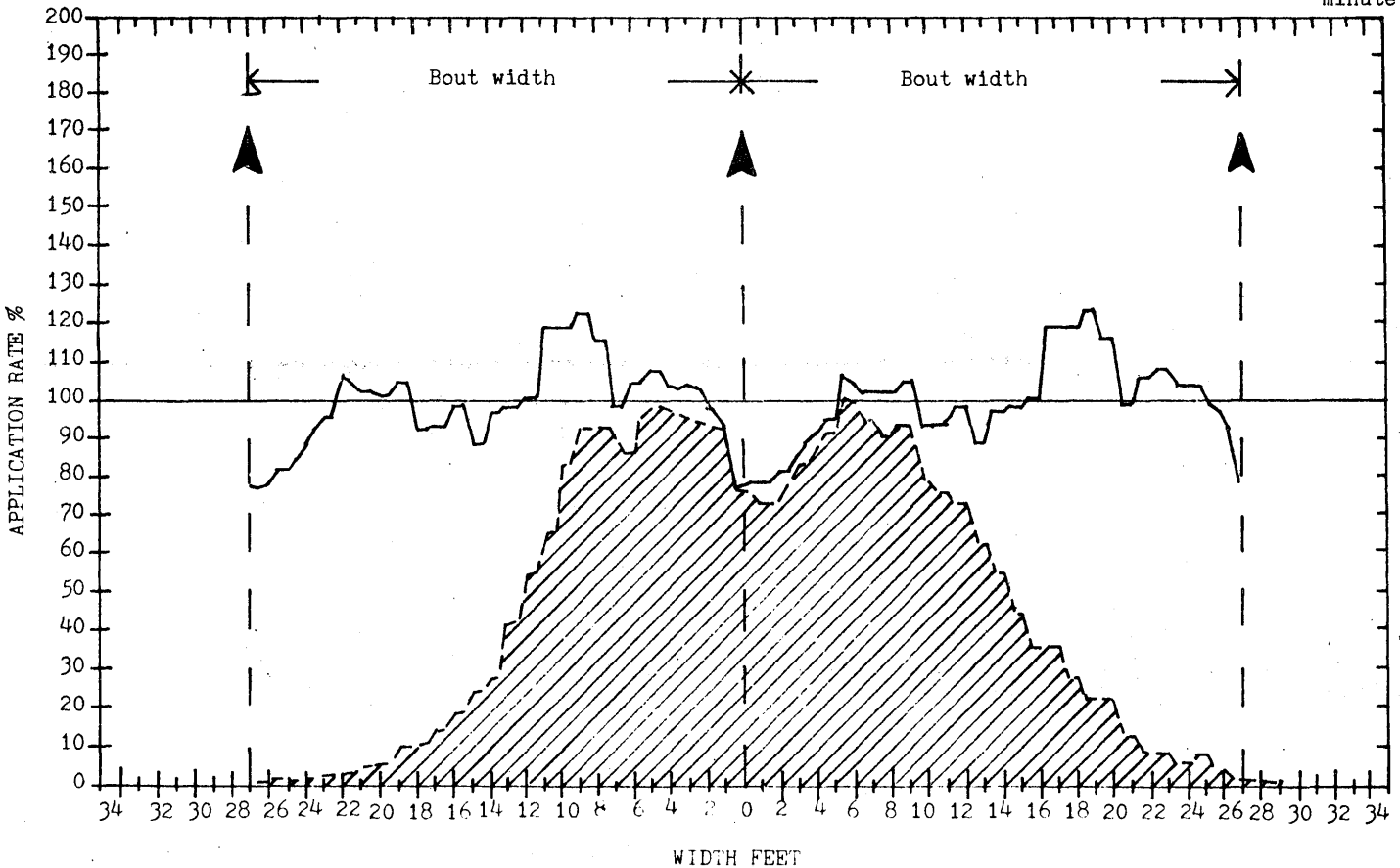
Mode of Travel: To & Fro
Above mean rate: ——————
Below mean rate: -------



TRANSVERSE DISTRIBUTION PATTERN

Name of Machine: Universal Colt
Disc Setting: Blades radial 400 R.P.M.
Position of Outlet Chutes: Fully Out
Bout Width: 27 Feet

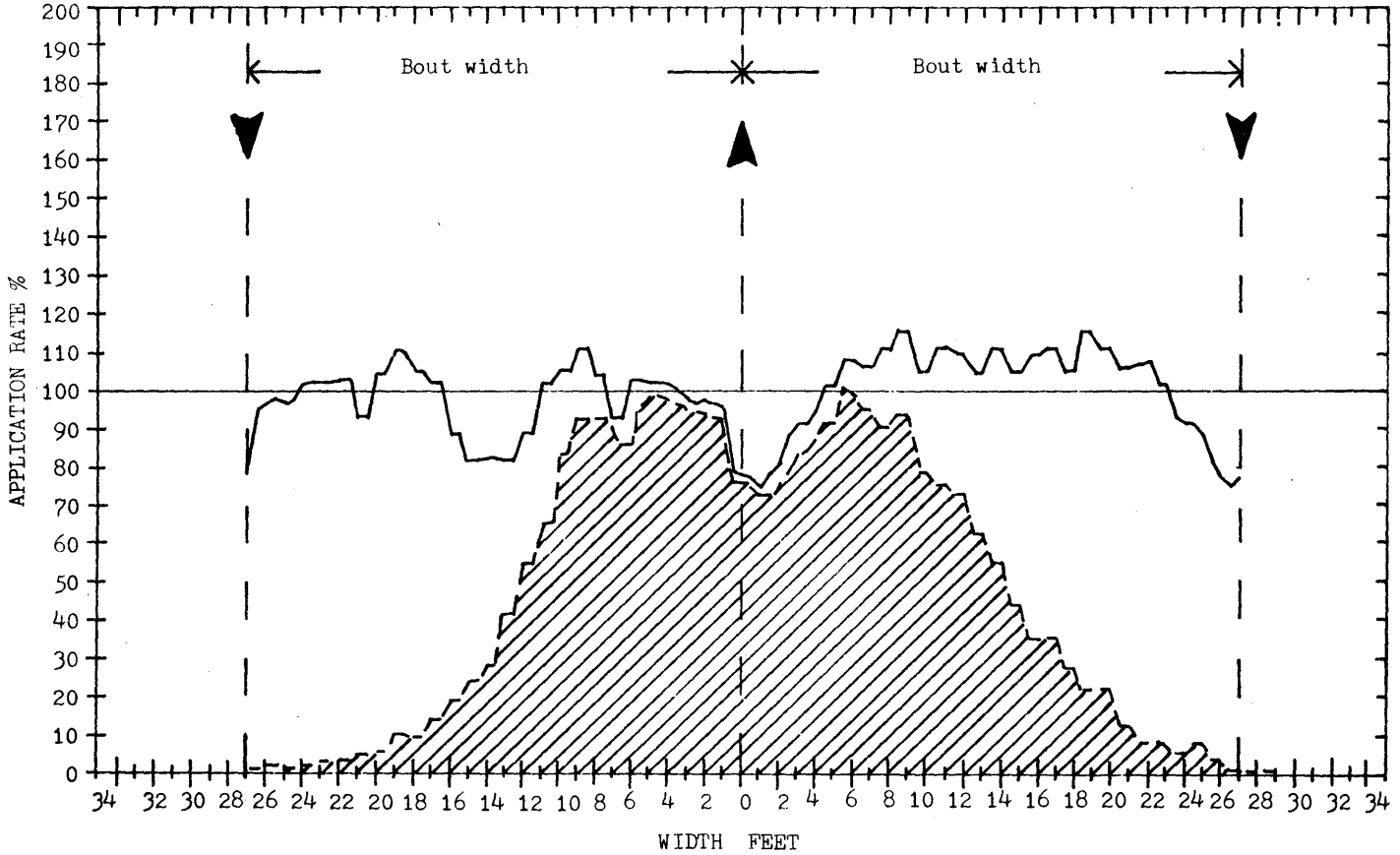
Material: Granulated Superphosphate
Mode of Travel: Round & Round
Application Rate: 1½ cwt per acre at 5 m.p.h. (Flow Rate 46 lbs per minute)



TRANSVERSE DISTRIBUTION PATTERN

Name of Machine: Universal Colt
Disc Setting: Blades radial 400 R.P.M.
Position of Outlet Chutes: Fully Out
Bout Width: 27 Feet

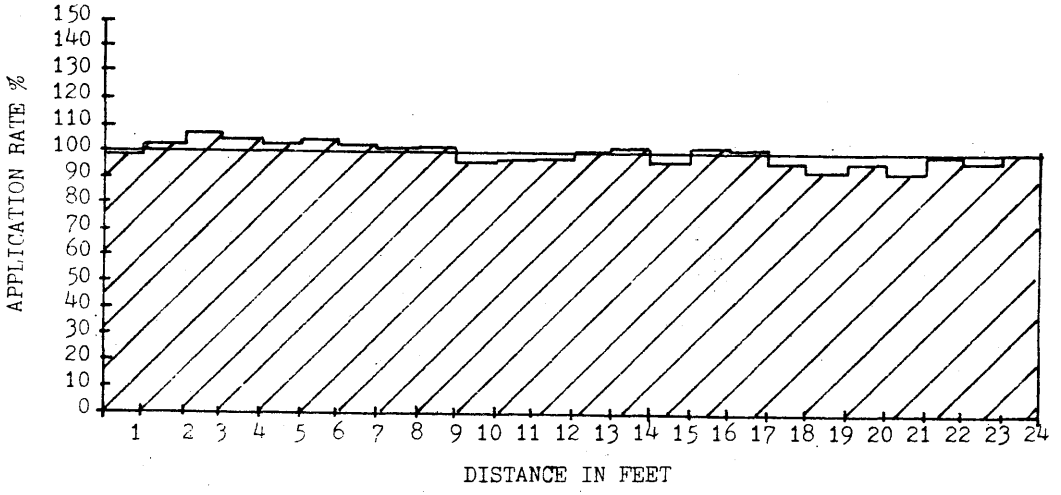
Material: Granulated Superphosphate
Mode of Travel: To & Fro
Application Rate: $1\frac{1}{2}$ cwt per acre
at 5 m.p.h. (Flow Rate 46 lbs per minute)



LONGITUDINAL DISTRIBUTION PATTERN

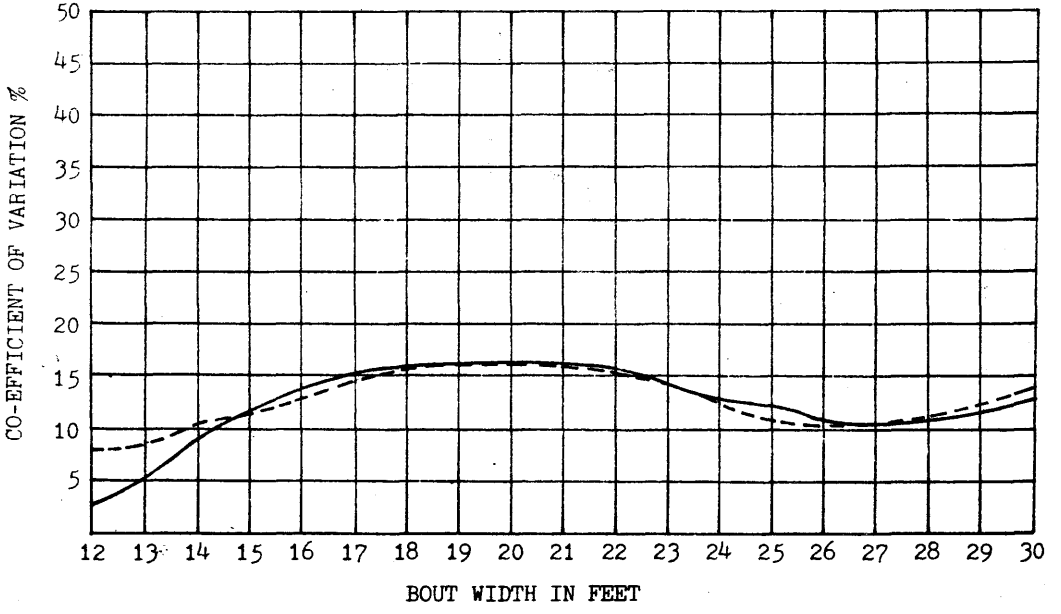
Name of Machine: Universal Colt
Disc Setting: Blades radial 400 R.P.M.
Position of Outlet Chutes: Fully Out

Material: Granulated Superphosphate
Application Rate: 1½ cwt per acre
Actual Test Speed: 1.64 M.P.H.



SENSITIVITY TO FLUCTUATIONS IN BOUT WIDTH

Mode of Travel To & Fro --------
Round & Round ————



COMMENTS ON PERFORMANCE:

The Co-efficient of Variation at the illustrated bout width of 27 feet for "Round and Round" travel was 11.3% (N.B. The lower the Co-efficient of Variation is the more even will be the distribution, perfect spreading being 0.0%. See NZAEI Project Report P.6).

From the Sensitivity to Fluctuations in Bout Width graph it will be seen that operating the machine Round & Round or To & Fro had little effect on the final distribution. Fluctuations in bout width from about 24 feet to 30 feet for both Modes of Travel will also have little effect on the final distribution.

MANUFACTURERS COMMENTS:

"This machine has now been superseded by the new Harman Colt. The salient feature of the new machine being a re-designed spinner giving a greatly improved spread."

Testing Officer [redacted]

Date 10-10-1969

Director [redacted]