



NEW ZEALAND AGRICULTURAL ENGINEERING INSTITUTE

LINCOLN COLLEGE

CANTERBURY

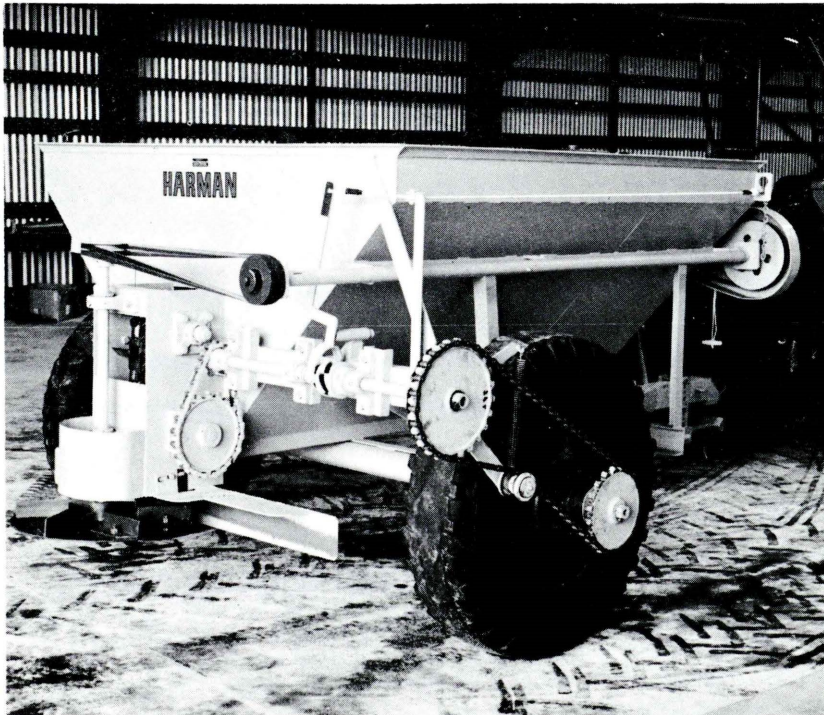
NEW ZEALAND

Public TEST REPORT NO. T/25

STILL AIR LABORATORY TEST ON THE UNIVERSAL COLT
SPREADING AMMONIUM SULPHATE



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
8	3.0
12	20.1
16	28.2
22	23.1
30	14.3
Par.	11.3

BULK DENSITY OF THE MATERIAL:

The bulk density was 62 lbs per cubic foot.

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

No. of Teeth on Driving Wheel	No. of Teeth Driven Wheel	Height of outlet slide above feed chain	Lbs delivered per minute
8	46	0"	20
8	46	1"	34
8	46	2"	43
11	46	0"	28
11	46	1"	48
11	46	2"	60

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

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

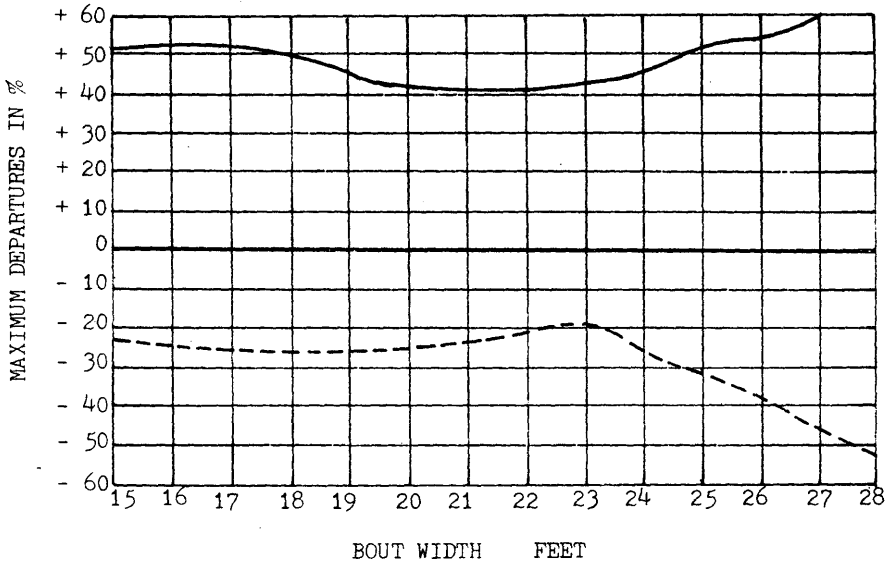
Name of Machine: Universal Colt

Disc Settings: Blades angled forward $1\frac{1}{2}$ " at disc
edge. 400 R.P.M.

Mode of Travel: Round &
Round

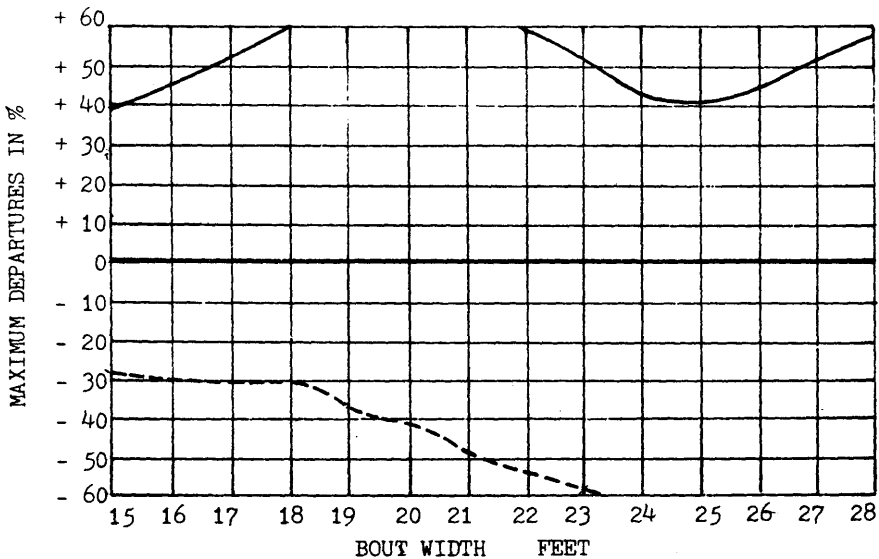
Outlet Chutes: Fully out

Above the mean rate: ———
Below the mean rate: - - - - -



Mode of Travel: To & Fro

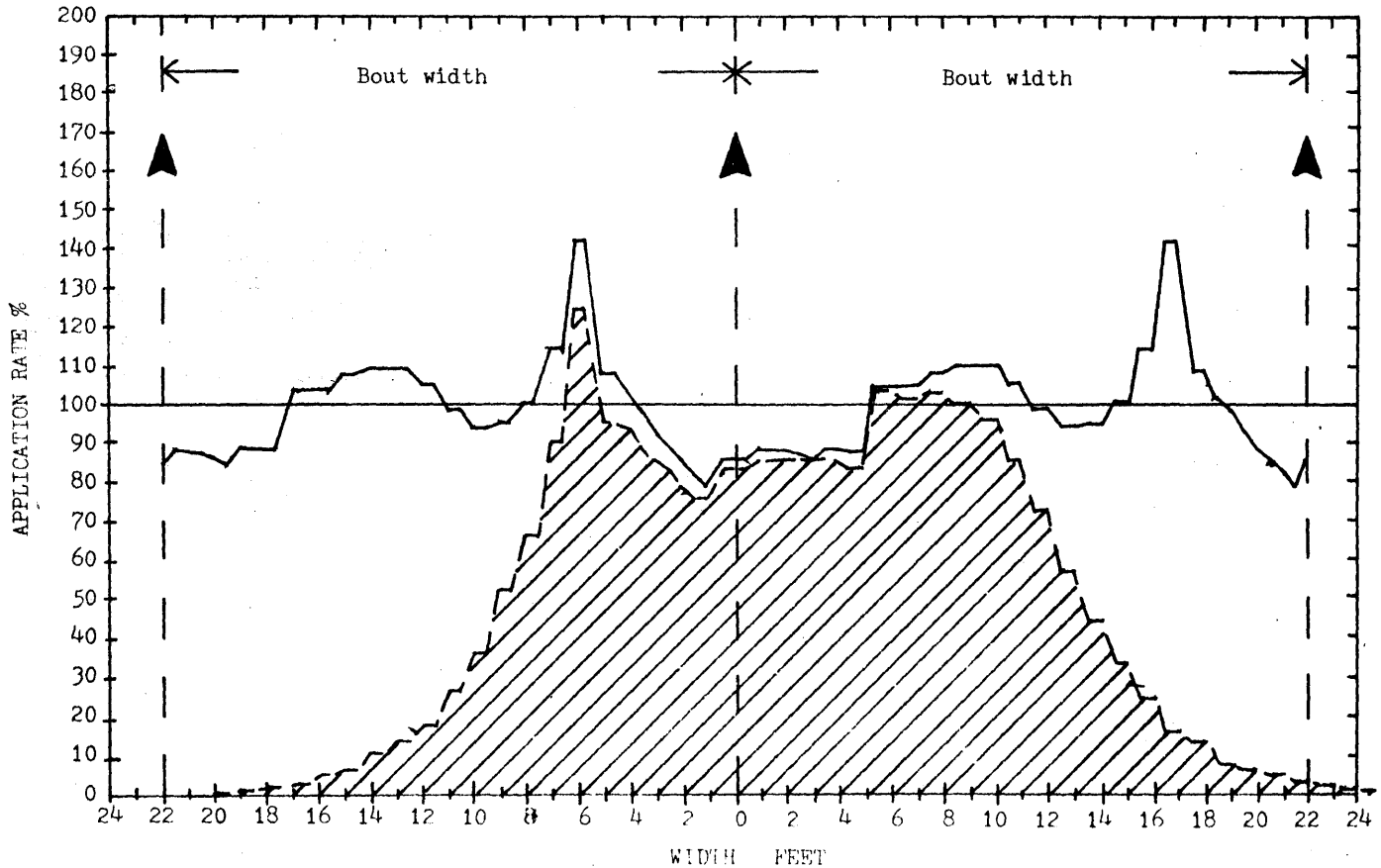
Above the mean rate: ———
Below the mean rate: - - - - -



TRANSVERSE DISTRIBUTION PATTERN

Name of Machine: Universal Colt
Disc Setting: Blades angled forward $1\frac{1}{2}$ "
at disc edge; 400 R.P.M.
Outlet Chutes: Fully Out
Bout Width: 22 Feet

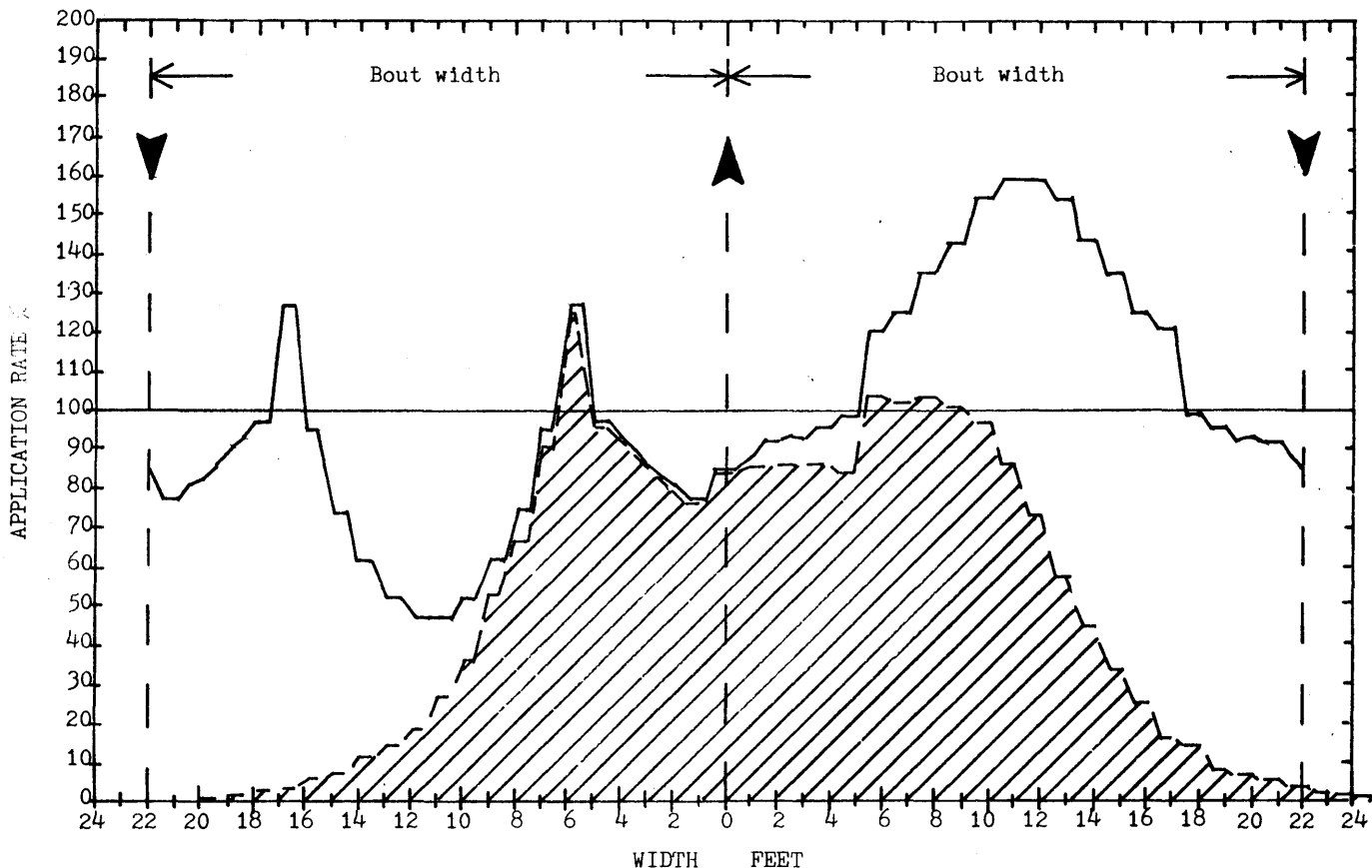
Material: Ammonium Sulphate
Mode of Travel: Round & Round
Application Rate: 2 cwt per acre
at 5 m.p.h. (Flow Rate 50 lbs per minute)



TRANSVERSE DISTRIBUTION PATTERN

Name of Machine: Universal Colt
 Disc Setting: Blades angled $1\frac{1}{2}$ " forward at
 disc edge, 400 R.P.M.
 Outlet Chutes: Fully Out
 Bout Width: 22 Feet

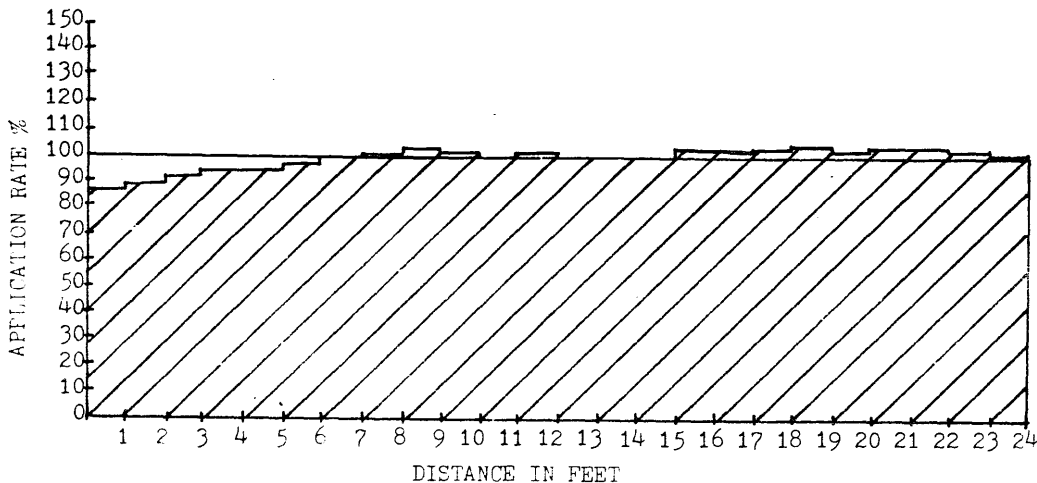
Material: Ammonium Sulphate
 Mode of Travel: To & Fro
 Application Rate: 2 cwt per acre
 at 5 m.p.h. (Flow Rate 50 lbs per minute)



LONGITUDINAL DISTRIBUTION PATTERN

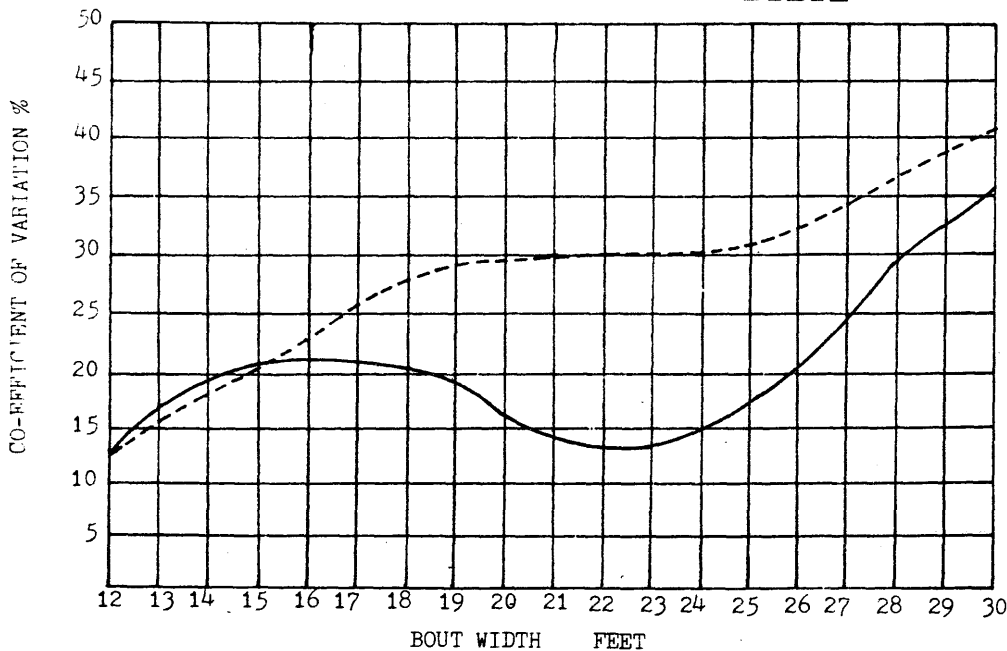
Name of Machine: Universal Colt
 Disc Setting: Blades Angled $1\frac{1}{2}$ " forward
 at disc edge. 400 R.P.M.
 Outlet Chutes: Fully Out

Material: Ammonium Sulphate
 Application Rate: 2 cwt to an acre
 Actual Speed: 1.64 m.p.h.



SENSITIVITY TO FLUCTUATIONS IN BOUT WIDTH

Mode of Travel: Round & Round
 " " : To & Fro




COMMENTS ON PERFORMANCE:

The Co-efficient of Variation at the illustrated bout width of 22 feet for "Round and Round" travel was 13.6% (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).

The shape of the curve or the Sensitivity to Fluctuations in Bout Width graph for the Mode of Travel "Round & Round" indicates a machine/material combination sensitive to driving errors. To achieve the spreading pattern displayed on the Transverse Distribution Pattern graph for "Round & Round" maintenance of the correct bout width involving accurate driving will be essential.

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 

Date 19-10-1969

DIRECTOR 