



# NEW ZEALAND AGRICULTURAL ENGINEERING INSTITUTE

LINCOLN COLLEGE

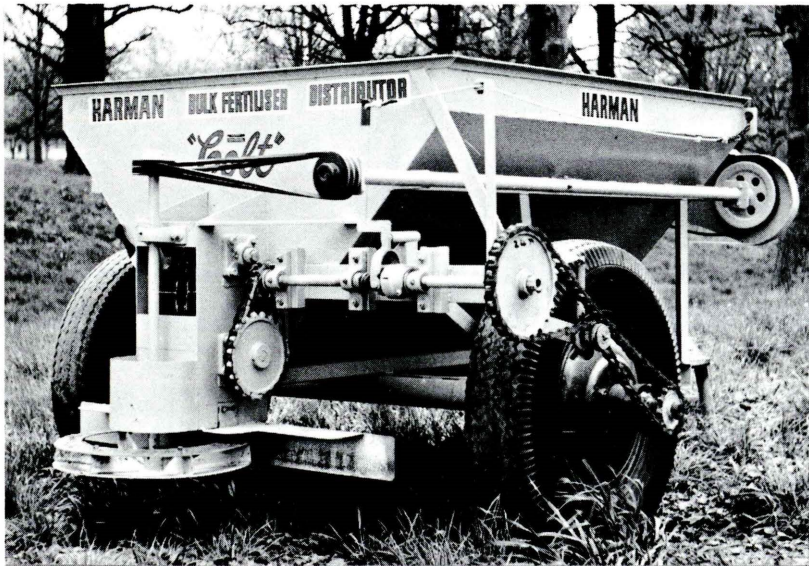
CANTERBURY



Public TEST REPORT NO. T/27

STILL AIR LABORATORY TEST ON THE HARMAN 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 Harman 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
Pan	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"	3
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: Harman Colt

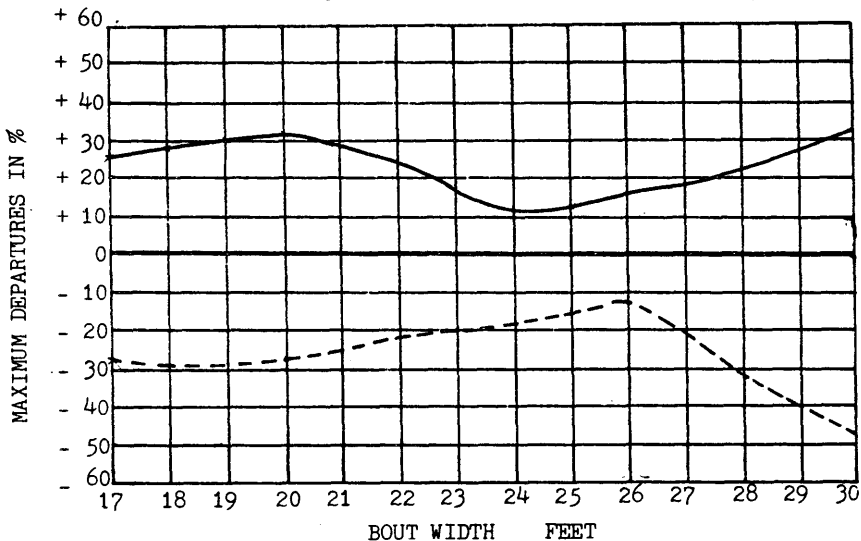
Disc Settings: Blades Radial 700 R.P.M.

Outlet Chutes: Fully Out

Mode of Travel: Round & Round

Above Mean Rate: \_\_\_\_\_

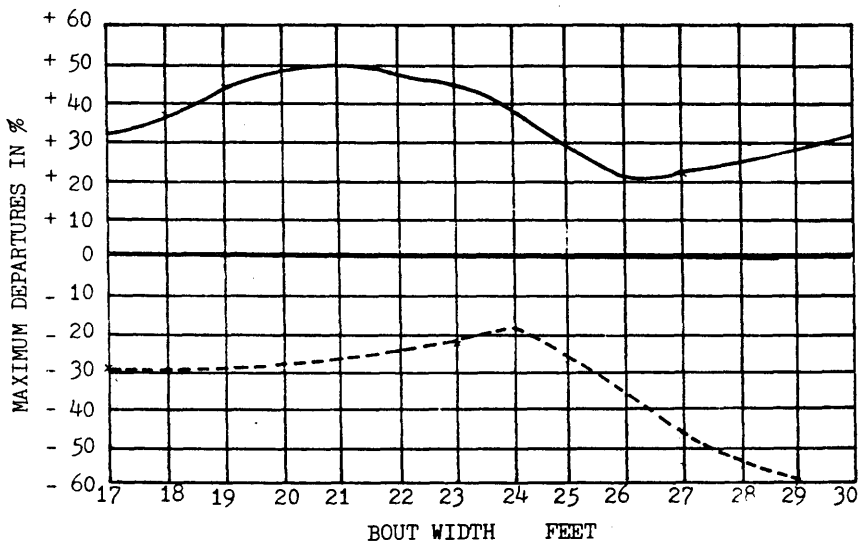
Below Mean Rate: - - - - -



Mode of Travel: To & Fro

Above Mean Rate: \_\_\_\_\_

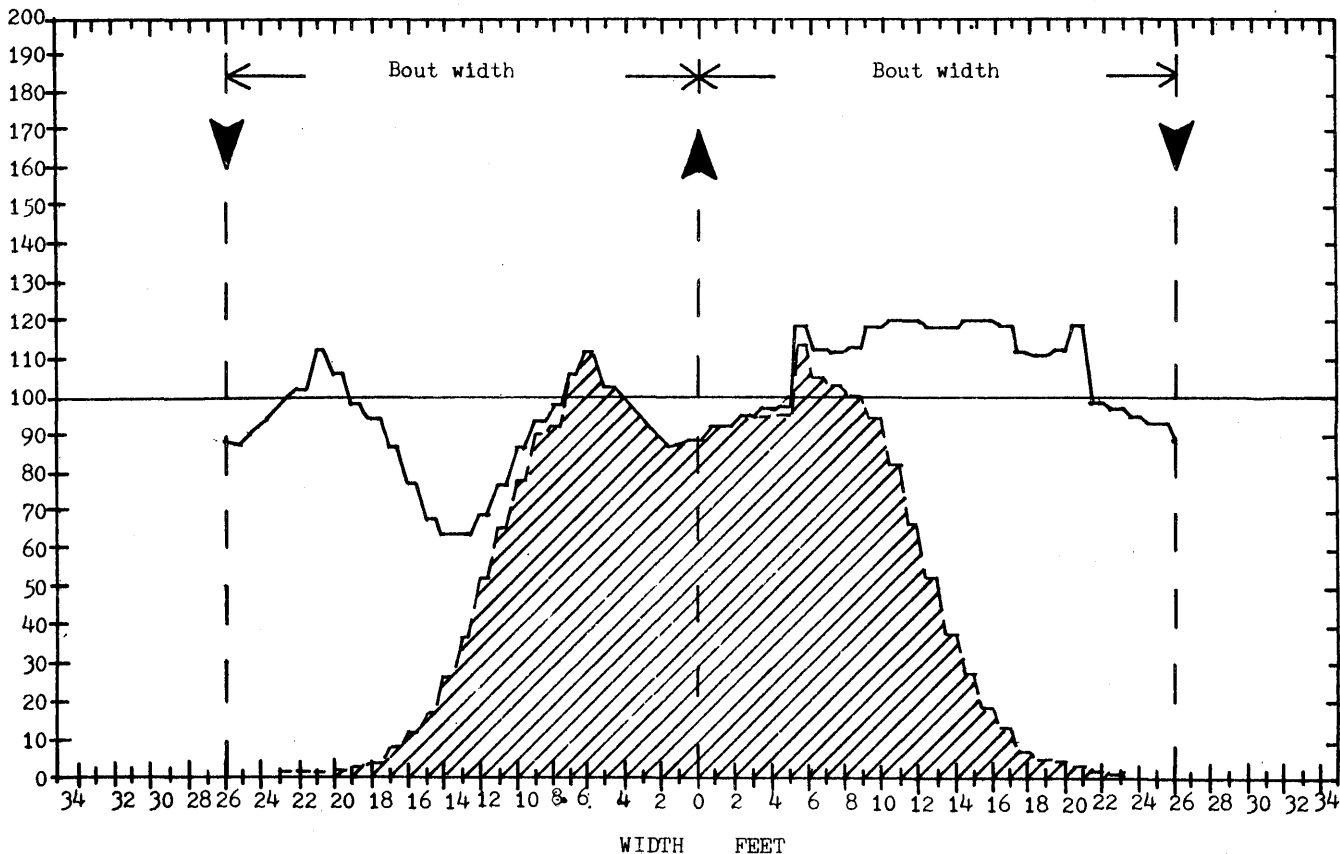
Below Mean Rate: - - - - -



# TRANSVERSE DISTRIBUTION PATTERN

Name of Machine: Harman Colt  
Disc Setting: Blades Radial 700 R.P.M.  
Position of Outlet Chutes: Fully Out  
Bout Width: 26 Feet

Mode of Travel: To & Fro  
Material: Ammonium Sulphate  
Application Rate: 2 cwt per acre  
at 5 m.p.h. (Flow Rate 57 lbs per minute)

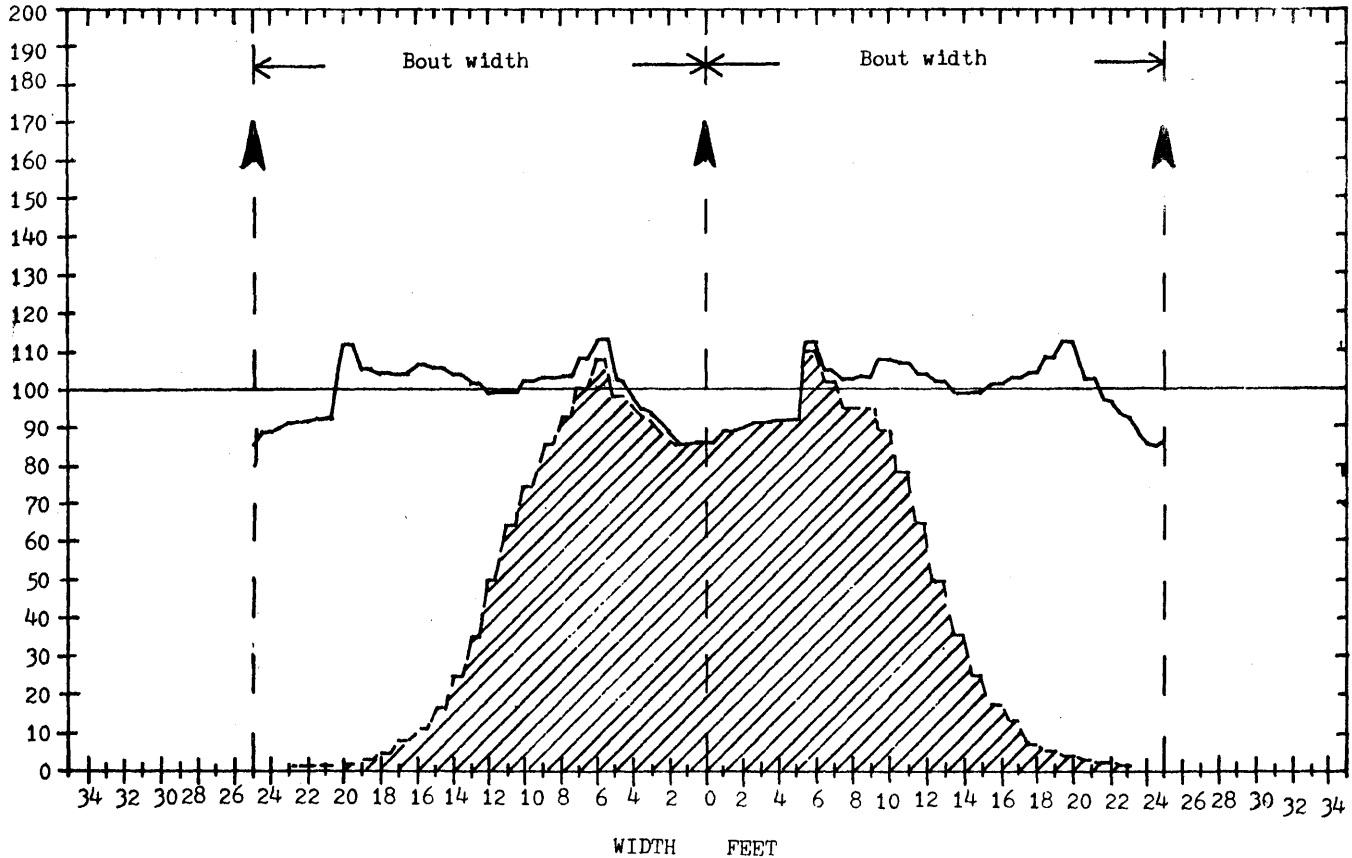


APPLICATION RATE %

# TRANSVERSE DISTRIBUTION PATTERN

Name of Machine: Harman Colt )  
Disc Setting: Blades Radial 700 R.P.M.  
Position of Outlet Chutes: Fully Out  
Bout Width: 25 Feet

Mode of Travel: Round & Round  
Material: Ammonium Sulphate  
Application Rate: 2 cwt per acre  
at 5 m.p.h. (Flow Rate 57 lbs per minute)

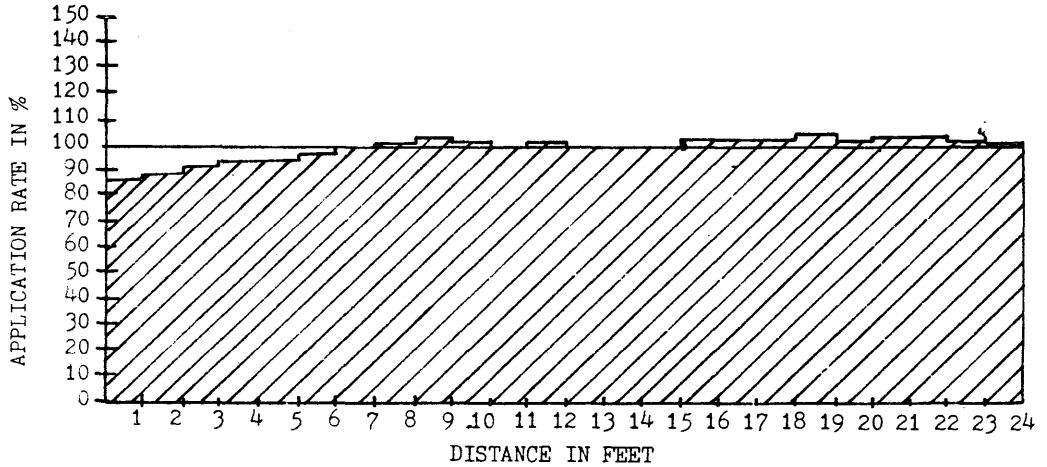


APPLICATION RATE %

LONGITUDINAL DISTRIBUTION PATTERN

Name of Machine: Harman Colt  
 Disc Setting: Blades Radial, 700 R.P.M.  
 Position of Outlet Chutes: Fully Out

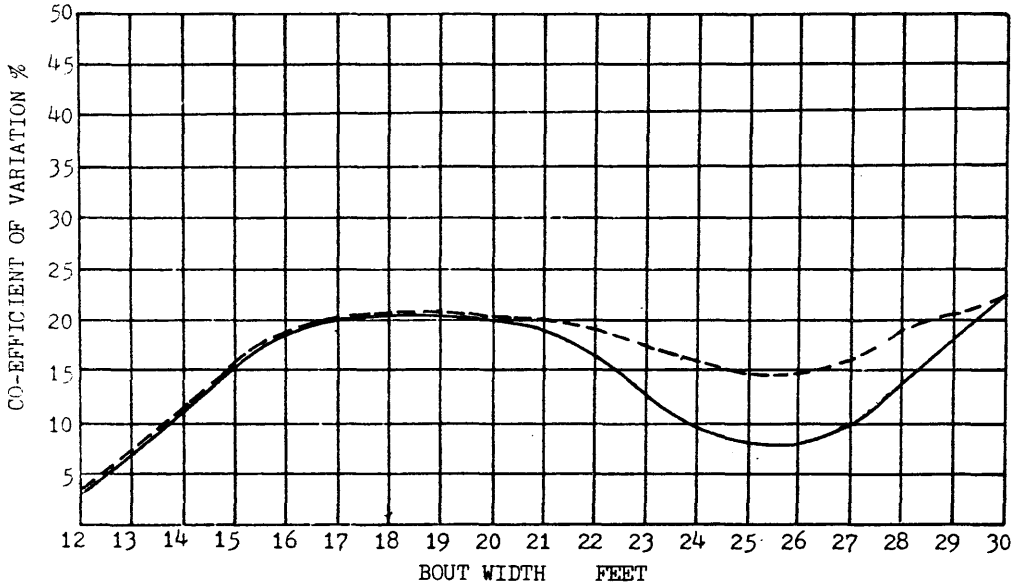
Material: Ammonium Sulphate  
 Application Rate: 2 cwt per acre  
 Actual Test Speed: 1.64 m.p.h.



SENSITIVITY TO FLUCTUATIONS IN BOUT WIDTH

Name of Machine: Harman Colt  
 Disc Setting: Blades Radial 700 R.P.M.  
 Position of Outlet Chutes: Fully Out  
 Application Rate: 2 cwt per acre

Material: Ammonium Sulphate  
 Mode of Travel: Round & Round ———  
 To & Fro - - - - -



COMMENTS ON PERFORMANCE:

The Co-efficient of Variation at the illustrated bout width of 25 feet for "Round and Round" travel was 7.8% (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 on 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 supersedes the Universal Colt and is fitted with a dished, fan type spinner giving improved spreading."

Testing Officer [REDACTED]

Date 10.10.1969

DIRECTOR [REDACTED]