



# NEW ZEALAND AGRICULTURAL ENGINEERING INSTITUTE



LINCOLN COLLEGE

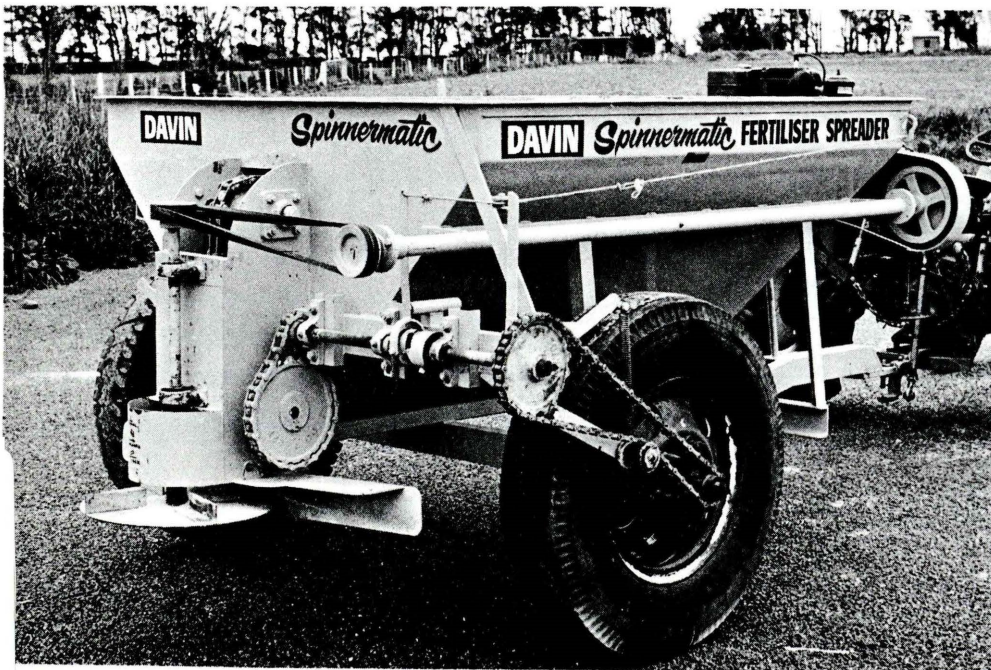
CANTERBURY

NEW ZEALAND

Public TEST REPORT NO. T/30

STILL AIR LABORATORY TEST ON THE DAVIN SPINNERMATIC  
FERTILISER DISTRIBUTOR SPREADING AMMONIUM SULPHATE

MANUFACTURER OF MACHINE: Davin Sheetmetals Ltd, 187 Dyers Road, Bromley.  
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 Davin Spinnermatic is a spinning disc, trailed or truck mounted fertiliser distributor, the spinning disc being either P.T.O. or auxiliary motor driven.

The trailed machine is of 2 ton hopper capacity while the truck mounted model is available in a range of hopper capacities from 3 ton 18 cwt to 5 ton 2 cwt.

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

Height 60". Width 88" Length 147"  
Rolling Radius of ground wheel 19½"

## SIEVE ANALYSIS OF THE AMMONIUM SULPHATE:

B.S. Sieve No.	% by weight retained
6	0.4
8	2.4
12	18.1
16	26.6
22	22.5
30	14.5
Pan	15.5

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 Sprocket	Height of Outlet Slide Above Feed Chain	Weight of material delivered in lbs per minute
7	50	0"	14
7	50	1"	25
7	50	2"	34
7	50	3"	44
7	50	4"	48

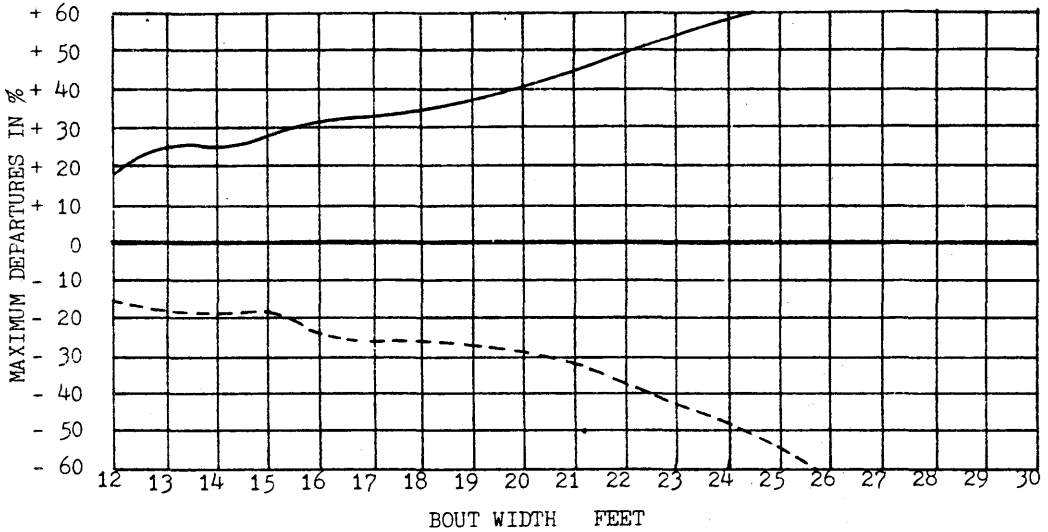
Opening the outlet slide further than 4" above the feed chain had no effect on hopper output.

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

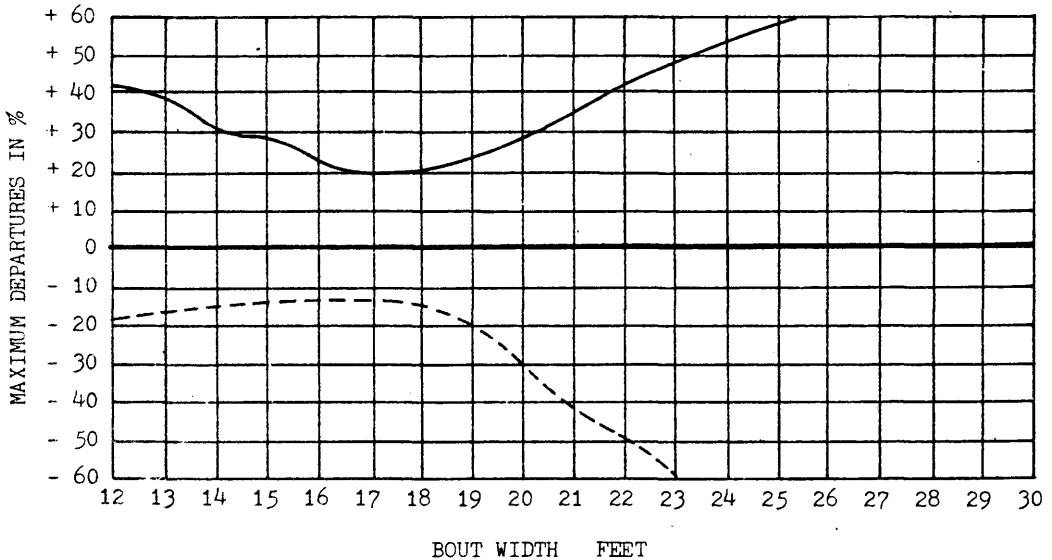
T/30

Name of Machine: Davin Spinnermatic  
Disc Settings: As for Transverse Distribution  
Position of Outlet Chutes: Fully Out

Mode of Travel: Round & Round  
Above Mean Rate: \_\_\_\_\_  
Below Mean Rate: -----



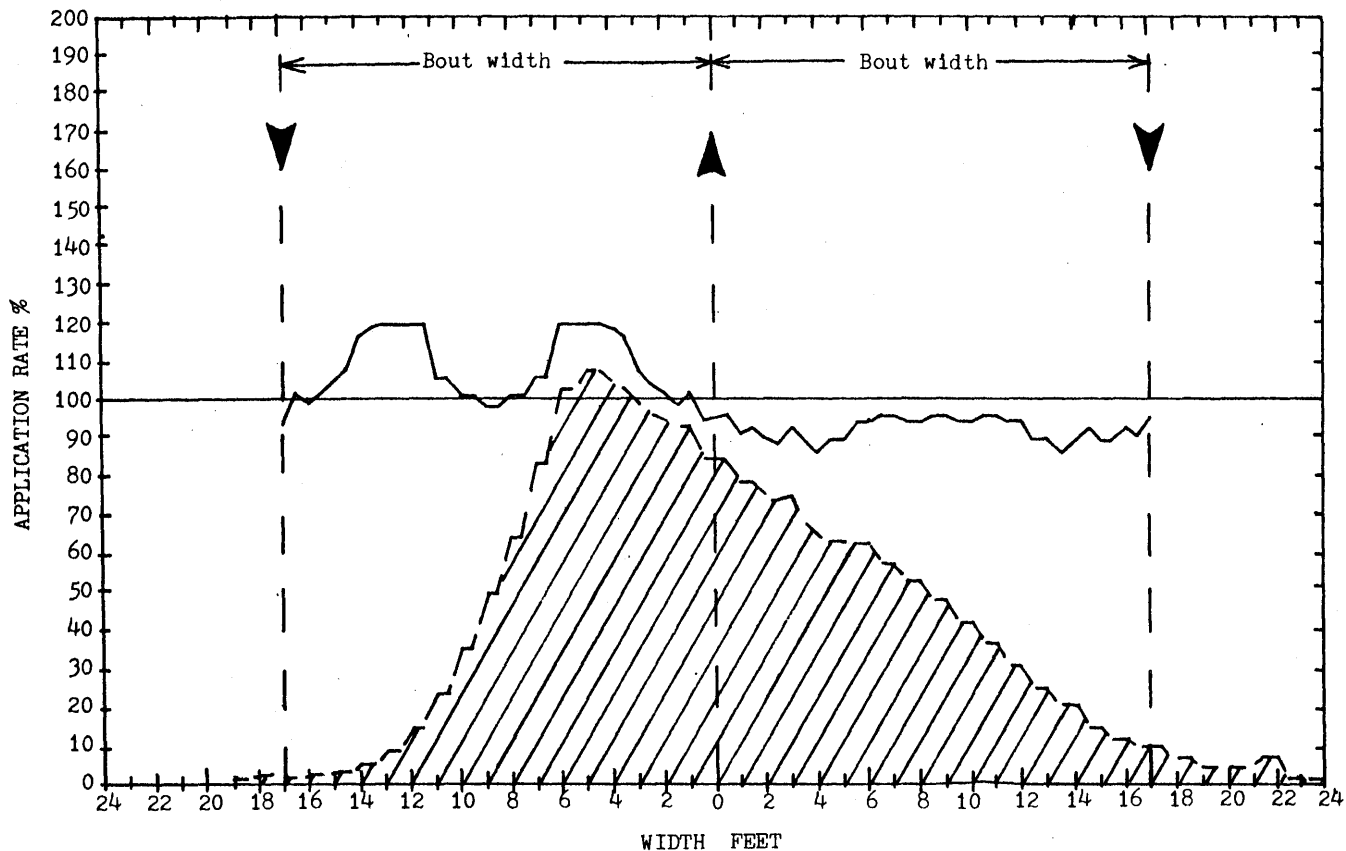
Mode of Travel: To & Fro  
Above Mean Rate: \_\_\_\_\_  
Below Mean Rate: -----



# TRANSVERSE DISTRIBUTION PATTERN

Name of Machine: Davin Spinnermatic  
Disc Setting: Spinner blades angled 3"  
Forward (in direction of travel of disc)  
at disc edge  
Position of Outlet Chutes: Fully Out

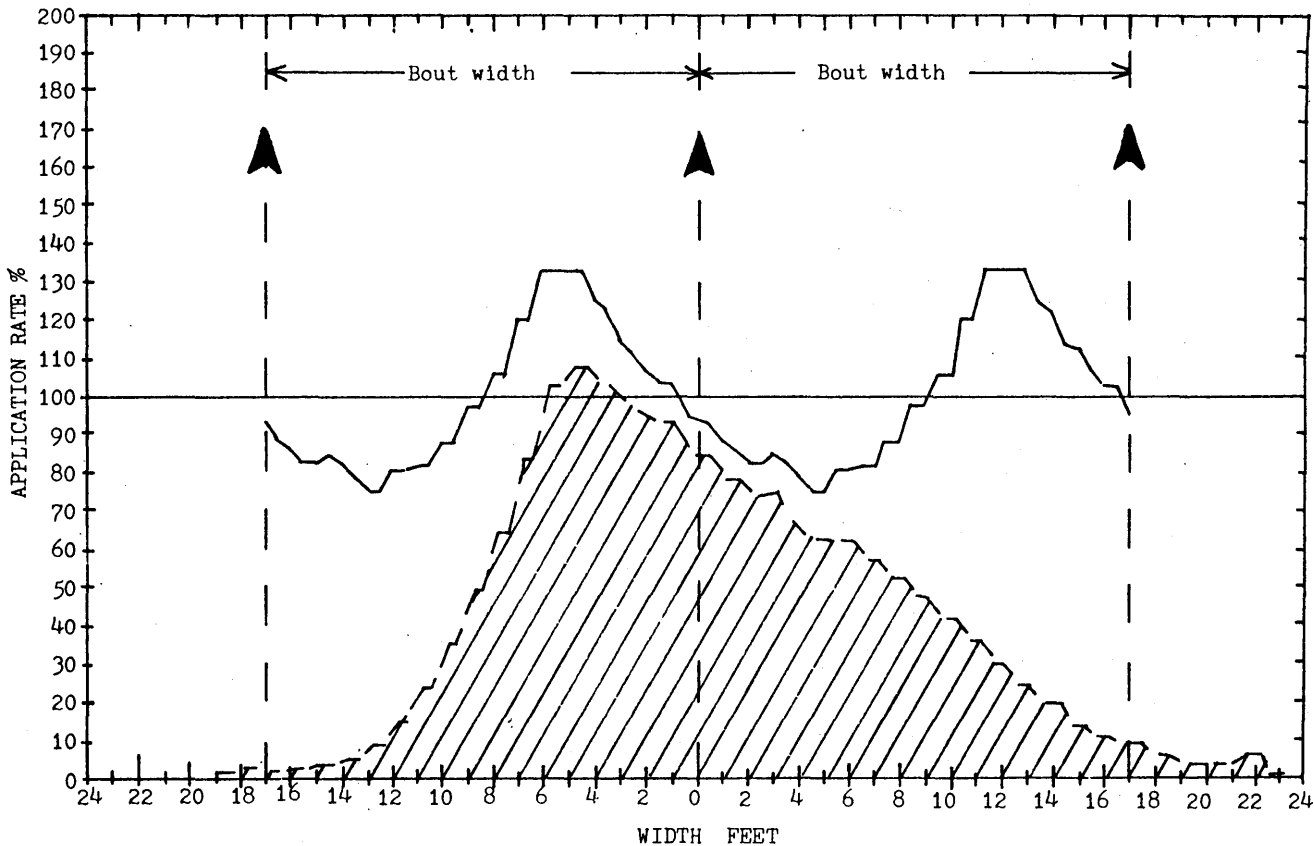
Material: Ammonium Sulphate  
Mode of Travel: To & Fro  
Application Rate: 1.5 cwt to an acre at  
5 m.p.h. ( $27\frac{1}{2}$  lbs per minute)  
Bout width: 17 Feet



# TRANSVERSE DISTRIBUTION PATTERN

Name of Machine: Davin Spinnermatic  
Disc Setting: Spinner blades angled 3"  
Forward (in direction of travel of disc)  
at disc edge  
Position of Outlet Chutes: Fully Out

Material: Ammonium Sulphate  
Mode of Travel: Round & Round  
Application Rate: 1.5 cwt to an acre  
at 5 m.p.h. ( $27\frac{1}{2}$  lbs per minute)  
Bout Width: 17 Feet



LONGITUDINAL DISTRIBUTION PATTERN

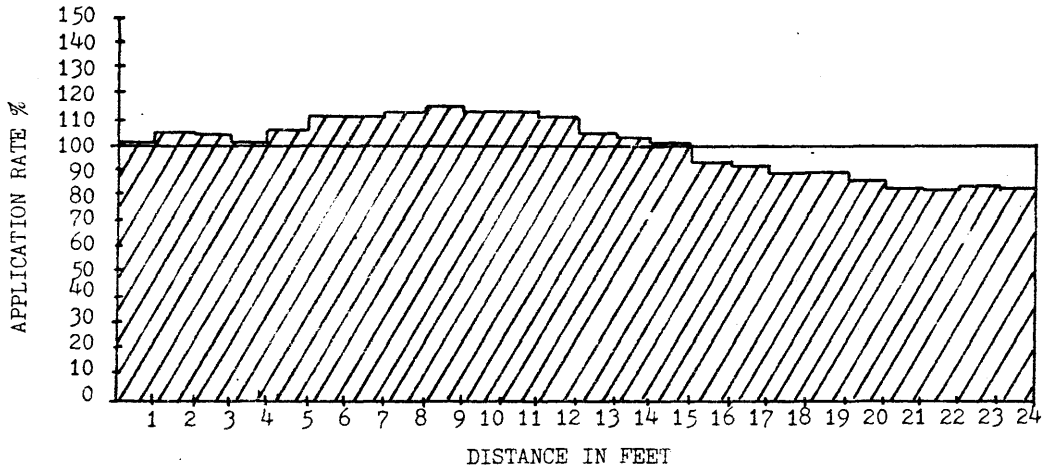
Name of Machine: Davin Spinnermatic

Material: Ammonium Sulphate

Disc Setting: As for Transverse Distribution

Application Rate: 1.5 cwt to an acre

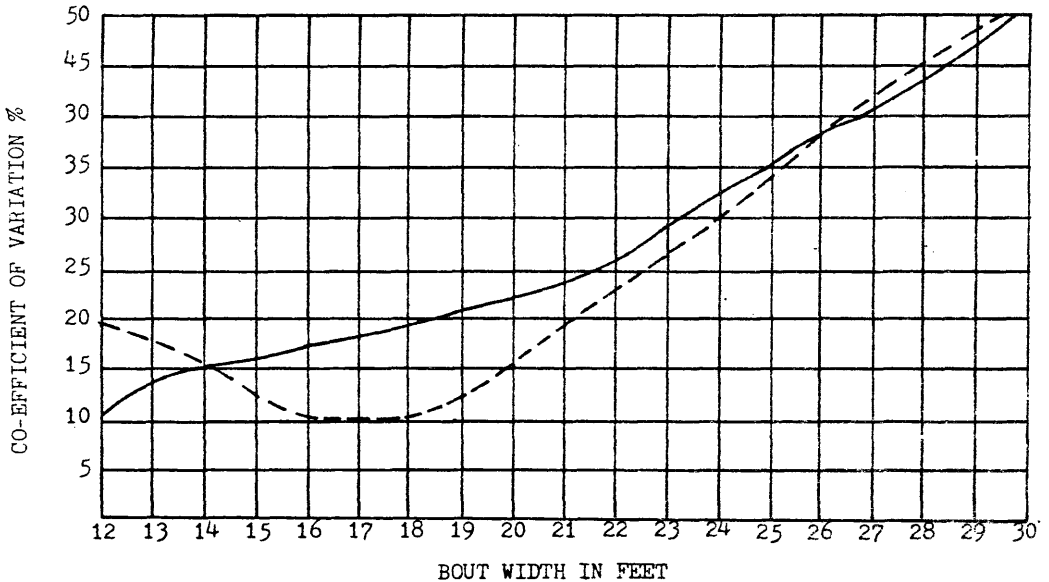
Actual Speed: 1.64 m.p.h.



SENSITIVITY TO FLUCTUATIONS IN BOUT WIDTH

Mode of Travel To & Fro -----

Round & Round —————



COMMENTS ON PERFORMANCE:

The Coefficient of Variation at the illustrated bout width of 17 feet for "To and Fro" travel was 10.3% (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).

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

The Longitudinal Distribution would be improved by the addition of extra flights on the feed chain.

MANUFACTURERS COMMENTS:

"Consideration is being given to the fitting of extra flights on the feed chain to improve Longitudinal Distribution. The machine will then be subject to further testing, with particular attention to Flow Rates."

Testing Officer [REDACTED]

Date 4.12.69

DIRECTOR [REDACTED]