



# NEW ZEALAND AGRICULTURAL ENGINEERING INSTITUTE

LINCOLN COLLEGE

CANTERBURY

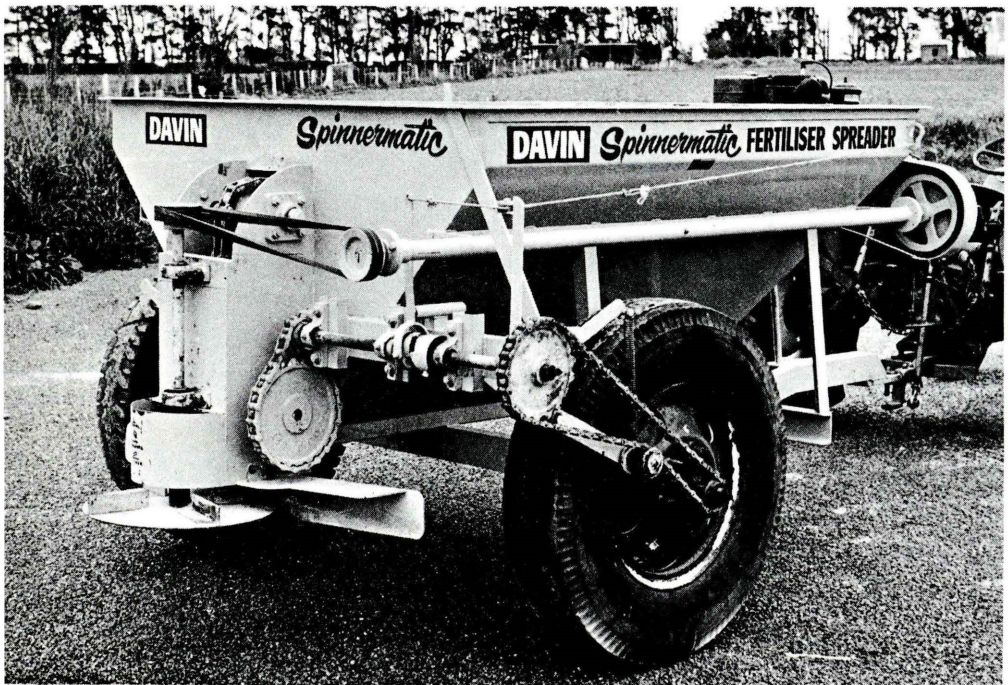
NEW ZEALAND

Public TEST REPORT NO. T/29



STILL AIR LABORATORY TEST ON THE DAVIN SPINNERMATIC  
FERTILISER DISTRIBUTOR SPREADING GRANULATED SUPERPHOSPHATE

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 MATERIAL:

B.S. Sieve No.	% by weight retained
3/16	4.0
1/8	19.9
6	7.8
8	22.2
12	16.9
16	9.3
22	6.0
30	4.3
Pan	9.6

## BULK DENSITY OF THE MATERIAL:

The bulk density was 81 lbs 6 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 Sprocket	Height of Outlet Slide Above Feed Chain	Weight delivered per minute in lbs
7	50	0"	19
7	50	1"	32
7	50	2"	42
7	50	3"	54
7	50	4"	59

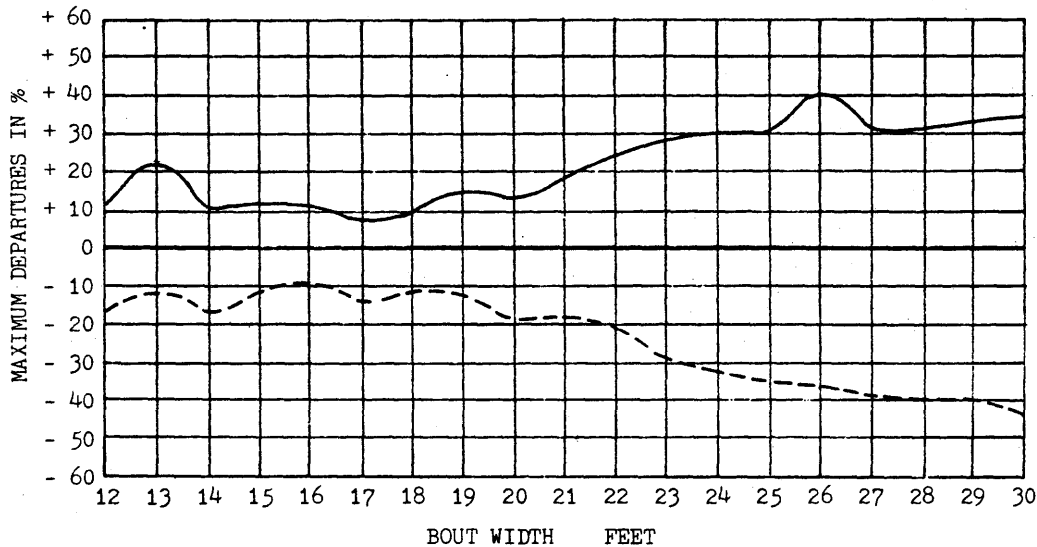
Opening the slide further than 4" above the delivery chain had no effect on hopper output.

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

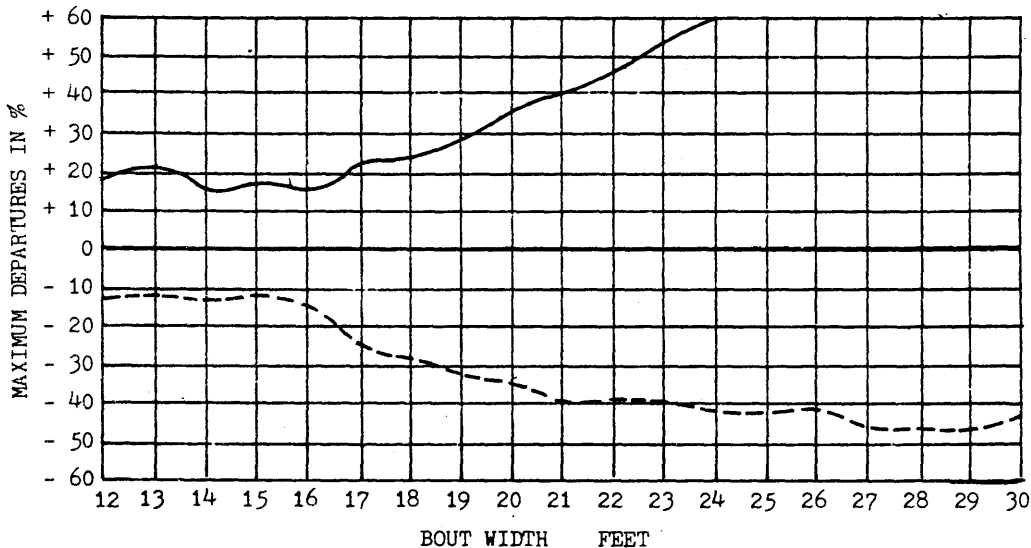
T/29

Name of Machine: Davin Spinnermatic  
Disc Settings: Blades Radial 750 R.P.M.  
Position of Outlet Chutes: Fully In

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



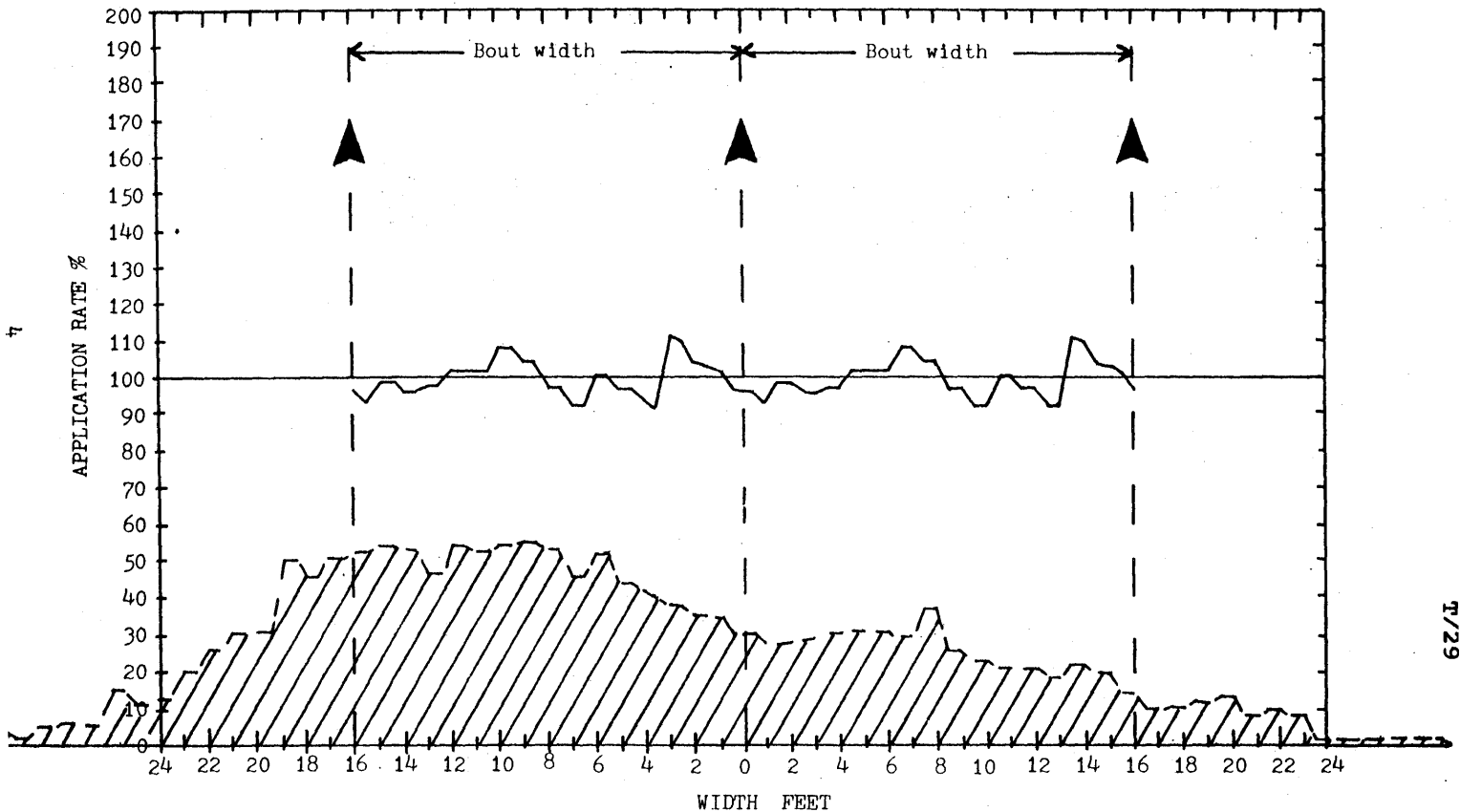
Mode of Travel: To & Fro  
Above Mean Rate: \_\_\_\_\_  
Below Mean Rate: -----



# TRANSVERSE DISTRIBUTION PATTERN

Name of Machine: Davin Spinnermatic  
Disc Setting: Blades Radial 750 R.P.M.  
Position of Outlet Chutes: Fully In

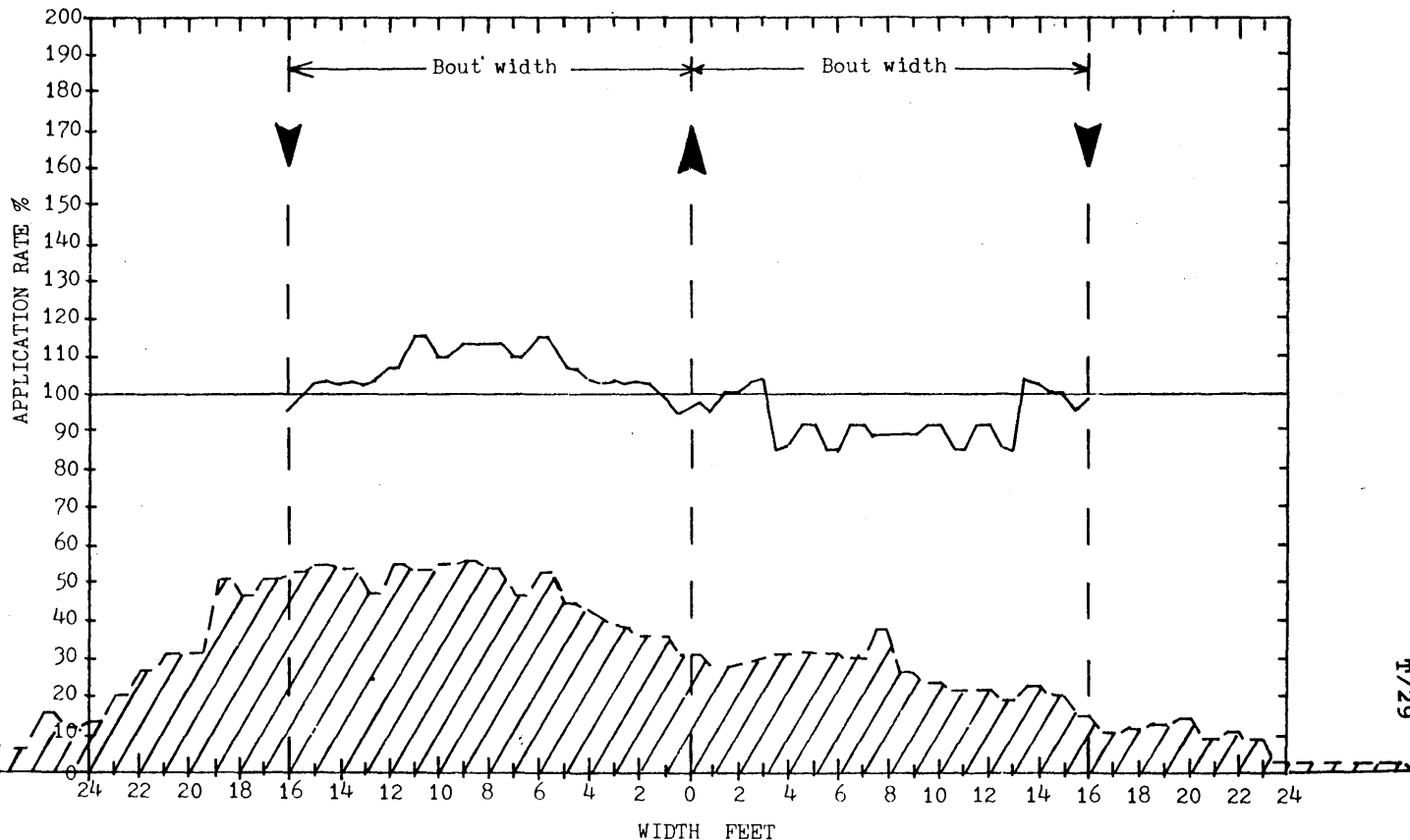
Material: Granulated Superphosphate  
Mode of Travel: Round & Round  
Application Rate: 1.5 cwt to an acre  
at 5 m.p.h. (Flow Rate 27 lbs per minute)  
Bout Width: 16 Feet



TRANSVERSE DISTRIBUTION PATTERN

Name of Machine: Davin Spinnermatic  
 Disc Setting: Blades Radial 750 R.P.M.  
 Position of Outlet Chutes: Fully In

Material: Granulated Superphosphate  
 Mode of Travel: To & Fro  
 Application Rate: 1.5 cwt to an acre  
 at 5 m.p.h. (Flow Rate 27 lbs per minute)  
 Bout Width: 16 Feet



LONGITUDINAL DISTRIBUTION PATTERN

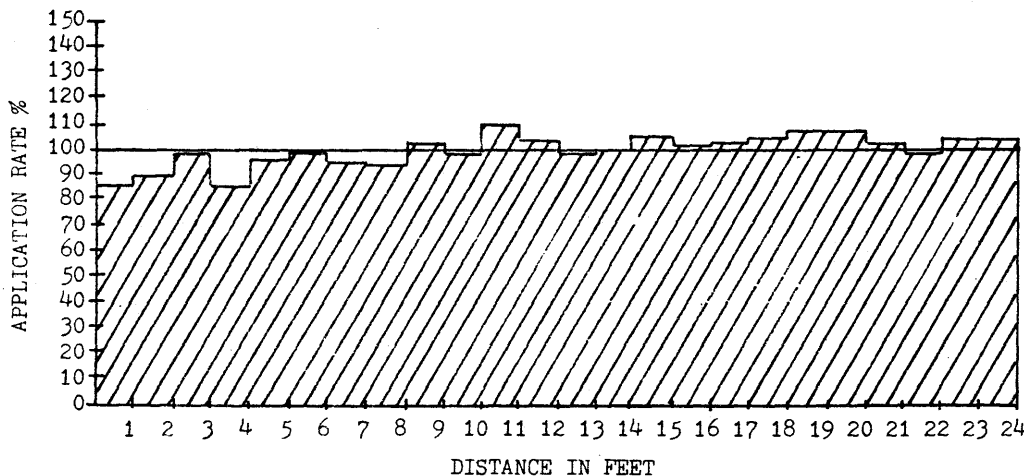
Name of Machine: Davin Spinnermatic

Material: Granulated Superphosphate

Disc Setting: As for Transverse Distribution

Application Rate: 1.5 cwt to an acre

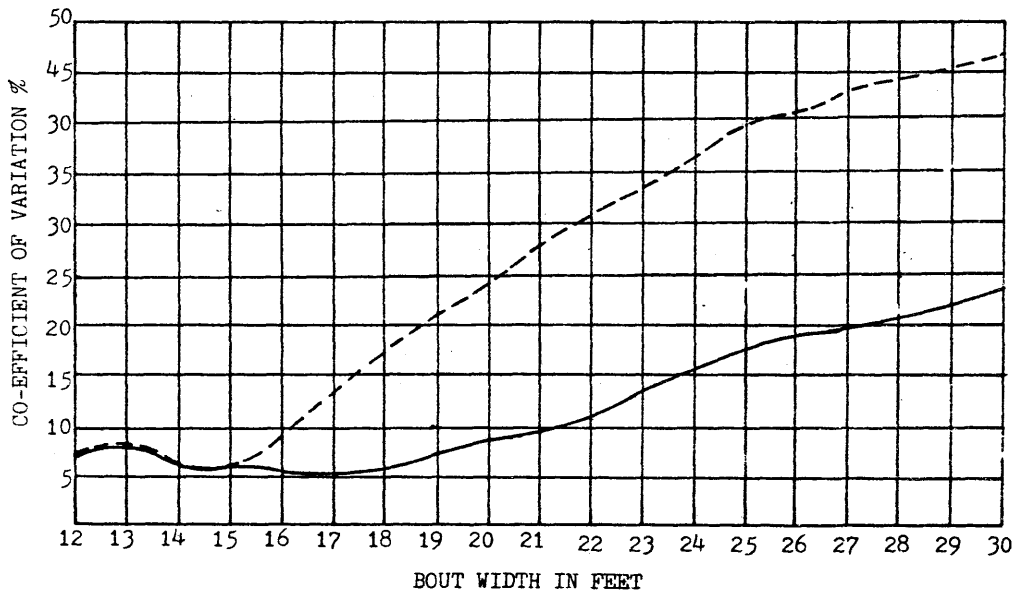
Actual Speed: 1.64 m.p.h.



SENSITIVITY TO FLUCTUATIONS IN BOUT WIDTH

Mode of Travel To & Fro -----

Round & Round \_\_\_\_\_



COMMENTS ON PERFORMANCE:

The Co-efficient of Variation at the illustrated bout width of 16 feet for "Round and Round" travel was 5.4% (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 and Round" at bout widths ranging from 14 feet to 18 feet had little effect on the final distribution.

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]