

SUGAR BEET

ASSESSMENT OF PELLET TYPE 1971 LAB TRIAL NAS 141 ML

SUMMARY

Seedling emergence was initially more rapid from a wet regime although the final emergence was not affected by the moisture content of the growing medium. The highest emergence was given by Knolle II at 95.1% followed by Germain and Kultura Linz pellets both at 93.6%. The lowest emergence was from rubbed and graded seed and H.I. pellets at 89.3 and 89.8% respectively. Rubbed and graded seed gave lower emergence under the driest and wettest regimes but pelleted seed was not affected by moisture content of the growing medium.

OBJECT

To compare the effect of pellet type on percentage germination and rate of seedling emergence at three soil moisture contents.

TREATMENTS

Main Plot	Pellet Type	Soil Moisture Content
1.	Knolle III	1. Dry
2.	Kultura Linz	2. Moist
3.	Knolle I	3. Wet
4.	Rubbed and Graded Seed 9-12/64 in.	
5.	Knolle II	
6.	H.I.	
7.	Maribo	
8.	Germain	
9.	Cérès	

LAYOUT

3 randomised blocks (Factorial)
Plot size = 50 seeds

SOIL TYPE

Growing medium consisted of 1:35 parts (weight) of Fisons Peat to Ashley top soil.

VARIETY

Monohill (same seed stock used for all pellet types) rubbed and graded 9-12/64 in.

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METHOD

A growing medium was prepared using 1:35 (weight) Fisons Peat to topsoil of the Ashley soil series. Three soil moisture regimes were then obtained by mixing 0, 2 and 4 pints water with 75 lb compost. Two soil samples were taken from each regime to determine the actual moisture content.

A standard volume of soil was placed in each seed tray and lightly compressed. The seeds were then planted and uniformly covered with soil through a 3/16 in. sieve. The seed trays were covered in polythene to minimise moisture loss. Seedling counts were taken after 5, 7, 9, 12 and 14 days by careful removal from the seed trays. The temperature fluctuated between 13.5 and 17 °C during the period of the experiment.

RESULTS

1. The results of the determinations for soil moisture content as a percentage of Dry Matter were:

	Sample 1	Sample 2	Mean
Dry	24.3	24.6	24.4
Moist	25.7	27.5	26.6
Wet	31.6	31.3	31.4

2. The results of the seedling emergence counts after 5, 7, 9 and 14 days are given in the table, the counts on day 12 are omitted as they were very similar to the final counts on day 14.

On average seedling emergence was the most rapid from the wettest compost but by day 12 and also at the final assessment (day 14) there was no difference in emergence from the three moisture regimes. This result is in agreement with previous experiments which have shown the rate of seedling emergence to be slowest under the dry conditions. At the rather higher moisture contents used in previous experiments seedling emergence from pellets has been reduced - this effect was not apparent at the moisture contents used in this year's experiment.

3. When meaned over the three moisture regimes the lowest seedling emergence was given by rubbed and graded seed and the H.I. pellet at 89.3 and 89.8% respectively. Knolle II gave a statistically significant increase in emergence at 95.1% compared with either rubbed and graded seed or the H.I. pellet. Seedling emergence from both the Germain and Kultura Linz pellets were the next highest at 93.6%.
4. Rubbed and graded seed gave the most rapid emergence up to day 9 and Kultura Linz, H.I. and Ceres pellets the slowest. At the final count rubbed and graded seed tended to give lower seedling emergence from the driest and wettest regimes. Pelleted seed however was largely unaffected by the moisture content of the growing medium with the possible exception of the Ceres pellet which showed some indication of a lower emergence under drier conditions.

5. The highest number of doubles was given from Knolle III and Germain pellets and the lowest by H.I. and Ceres although these differences were not statistically significant.

R.W.C.
July, 1972;

PELLET TYPE	Percentage Seedling Emergence						% Doubles															
	Day 5		Day 7		Day 9		Day 14															
	24.4	26.6	31.4	24.4	26.6	31.4	24.4	26.6	31.4	Mean	Mean											
	Soil Moisture Content % D.M.																					
	24.4	26.6	31.4	24.4	26.6	31.4	24.4	26.6	31.4	24.4	26.6	31.4	Mean	Mean								
Knolle III	(± 2.78)		0.7	8.7	15.3	(± 5.25)		30.0	65.3	68.7	(± 3.98)		77.3	84.7	88.7	(± 1.62)		90.9	90.9	(± 1.043)		
Kultura Linz			0.0	7.3	8.0			22.0	46.7	64.0			78.7	82.7	85.3			94.7	94.7	91.3	3.38	
Knolle I			2.0	23.3	5.3			41.3	72.0	66.0			77.3	86.7	84.0			91.3	88.7	92.0	2.17	
Rubbed and Graded			1.3	22.0	30.7			52.7	74.7	68.0			80.7	93.3	77.3			88.7	95.3	84.0	2.45	
Knolle II			2.7	15.3	26.0			38.0	68.7	68.7			79.3	88.0	86.7			94.7	95.3	95.3	3.11	
H.I.			0.0	8.7	9.3			24.7	52.0	60.7			74.0	73.3	78.0			93.3	88.0	88.0	1.79	
Maribo			0.0	12.0	21.3			42.0	58.7	77.3			84.0	80.0	85.3			93.3	90.0	92.0	3.40	
Germain			0.0	17.3	20.0			42.0	72.7	76.0			84.7	86.7	84.7			94.7	94.7	91.3	4.30	
Ceres			0.0	2.0	4.0			12.0	44.7	48.7			60.7	82.0	82.7			87.3	93.3	93.3	1.47	
Mean	(± 0.93)		0.7	13.0	15.6	(± 1.75)		33.9	61.7	66.4	(± 1.33)		77.4	84.1	83.6	(± 0.93)		92.1	92.1	91.0	2.94	
SE (52 df) % seedling emergence as % G.M.			± 4.82			± 9.09			16.82			± 6.89			± 4.86			5.29			± 3.129	-106.52

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Eight pellet types were compared with rubbed and graded seed for percentage germination. The same stock of Monohill seed was used throughout. Percentage germination was determined at three soil moisture contents ranging from dry to wet. The actual soil moisture contents were:- 24.4, 26.6 and 31.4% of Soil Dry Matter. The eight pellet types were:- Knolle I, Knolle II, Knolle III, Kultura Linz, H.I., Mariba, Cérés and Germain.

RESULTS:

1. Seedling emergence was initially more rapid from a wet regime although the level of final emergence was not affected by the moisture content of the growing medium.
2. The highest emergence was given by Knolle II at 95.1% followed by Germain and Kultura Linz both at 93.6%. The lowest emergence was from rubbed and graded seed and H.I. pellets at 89.3% and 89.8% respectively.
3. Rubbed and graded seed gave lower emergence under the driest and wettest regimes but pelleted seed was not affected by moisture content.

ASSESSMENT OF PELLET TYPE 1971 FIELD TRIAL NAS 142 ML

The same eight pellet types were examined under field conditions for percentage germination and rate of seedling emergence. Drilling took place on 5 May into a dry seedbed which resulted in variable and protracted seedling emergence.

RESULTS:

1. Average seedling emergence was low at 54.6%
2. There were indications that Germain, Ceres and Knolle II pellets were initially slower to germinate.
3. Differences in final emergence were small. Knolle II gave the highest emergence at 60.1% and the H.I. pellet the lowest at 47.9%

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