

HDC Contract FV40A

**Polythene crop covers an addition
to FV40**

**Improving crop establishment by
seed priming pelleting and the
dibber drill**

1992 Report



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Horticultural Development Council

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Chairman: Mrs Margaret Charrington Chief Executive and Secretary: Eric Kennedy

Dear Grower

Project FV40a - 1992 Report
Polythene Crop Covers an addition to FV40
Improving crop establishment by seed
priming, pelleting and the dibber drill

Following your request for the report FV40a we enclose the 1992 project results. Unfortunately the trial was severely infested by onion white rot disease which invalidated the final results.

However, you may find some useful information from the emergence data.

This trial is currently being repeated and you will be able to see in Project News when the final report becomes available.

Yours faithfully

Mary Bosley
Communications Manager

Final Report: August 1993

Project Number: FV40A

Project Title: Polythene crop covers an addition to FV40 improving crop establishment by seed priming, pelleting and the dibber drill

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Location of project: HRI-Kirton

Date commenced: January 1992

Date completed: November 1992

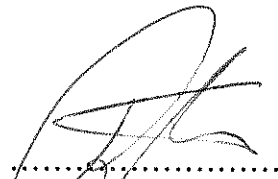
Key words: Onion, establishment, crop-covers

PRINCIPAL WORKER

R W P HIRON

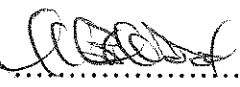
AUTHENTICATION

I declare that this work was done under my supervision according to the procedures described herein and that this report represents a true and accurate record of the results obtained.


.....
(Signature)

R W P Hiron

Date ..12-2-93.....

Report authorised by 
.....
(Signature)

M B Wood
Project Leader for:-

Dr M R Shipway
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Relevance to growers and practical application

Application

There is no practical application because this trial was severely infected with *Sclerotinia cepivorum* (onion white rot) and the results, especially those of yield, have to be treated with the utmost caution as the attack was so severe as to render them meaningless. This report is merely a record of the work done.

Summary

Establishment and yield were compared from onion crops established by drilling using a Stanhay drill or the Dibber drill, the latter being used in conjunction with or without Alcosorb to fill the dibber hole. It was also intended that these crops would also be compared with a transplanted crop. Data is presented but the trial was so infested with onion white rot disease as to make all comparisons dubious.

Experimental Section

Introduction

The main project FV40 - Improving crop establishment by seed priming, pelleting and the Dibber drill combines with FV39 - Timing of water supply during crop establishment, in seeking to exploit direct seeding of crops for which the use of modules is either impractical or prohibitively expensive in relation to current market values. The latter category includes much of the bulb onion crop which has been used as one of the test crops in FV40.

Polythene covers are known to advance emergence and growth of many crops, including onion crops, as a result of the soil warming, moisture retention and wind protection they provide. But the value of this technique as an alternative or adjunct to the existing treatments in FV40 have yet to be tested. The following describes the start of work instigated to look at these interactions.

Materials and Methods

i Treatments

- 1) Dibber drill
 - a) Dibber drill plus Alcosorb
 - b) Dibber drill no Alcosorb
 - c) Dibber drill plus Alcosorb plus polythene
 - d) Dibber drill no Alcosorb plus polythene

- 2) Stanhay drill
 - a) Stanhay plus polythene
 - b) Stanhay no polythene

- 3) Transplants
 - a) Multi seeded (5 plants/cell) 308 cellular tray-raised transplants

- 4) 6 reps = 42 plots

The polythene used was clear unperforated and 38 microns thick.

ii Crop diary

Crop: Onions

Field/Soil type: New Land 1 / Very fine silty loam

Soil analysis: pH 7.2 Index: N = 0, P = 4, K = 2

Previous cropping: 1990 - Grass
1991 - Grass

Cultivations: 18 and 19.10.91 - Subsoiled using a Flatlift with winged tines
05.12.91 - Lime applied at a rate of 10 tonnes/ha on low pH areas 5 tonnes/ha on rest
11.02.91 - Ploughed E-W
Worked with Lely before planting

Propagation: 28.01.92 - Three PG 308 trays of the cultivar Hysam sown, seed lot no. 34083.

Fertiliser: Base: ICI No 7 applied at 90 kg/ha N, all in base

Establishment: 06.04.92 - Dibber and Stanhay plots drilled
07.04.92 - Module control plots planted by hand

Herbicides: 09.04.92 - Pendimethalin as 1 l/ha Stomp and propachlor as 9 l/ha Ramrod applied, prior to covering relevant treatments with polythene
15.05.92 - Chlorbufam and chloridazon applied as 1/2 rate Alicep at 2 kg/ha

Insecticides: 07.07.92 - Deltamethrin as Decis applied

Fungicides: None applied

Irrigation: None applied

Notes:

Final emergence count done on 06.05.92

Polythene removed from covered plots on
13 May

Photocopies of seedlings taken on 7, 15 and
26 May 1992

Transplants harvested on 19 August

Stanhay established plots harvested on
28 August

Dibber drill-established plots harvested on
10 September

Trial graded on 9 November

iii Assessments

- 1) Stand counts
- 2) Fresh weights end May
- 3) Photocopies of seedlings at three times between approximate post crook and
1½ true leaves
- 4) Diedown estimates
- 5) Yield and quality assessments

Results and Discussion

1. Emergence and final stand counts

The plots were drilled on 6 April and monitored daily. First emergence was seen under the polythene on 22 April and daily counts commenced. However, it soon became evident that it was impractical to uncover polythene covered plots daily for counting purposes without doing considerable damage and therefore these were only counted on 22, 23 and 28 April

when good stands seemed to be established and 6 May for a final assessment. The results are presented in Table 1.

Table 1 Emergence of onion seedling

Treatment	Date									
	22/4	23/4	24/4	25/4	26/4	28/4	29/4	30/4	1/5	6/5
Dibber+Alcosorb +polythene	0.5	20.7	-	-	-	68.5	-	-	-	53.0
Dibber+Alcosorb no polythene	0	0	0	2.0	13.0	48.8	61.3	72.0	77.0	88.3
Dibber+Alcosorb +polythene	1.5	17.2	-	-	-	58.8	-	-	-	52.3
Dibber no Alcosorb no polythene	0	0	0	1.3	13.8	52.5	63.2	74.5	80.7	91.2
Stanhay+polythene	21.2	67.7	-	-	-	88.2	-	-	-	88.2
Stanhay no polythene	0	0	0	2.3	11.0	38.8	46	59.3	64.8	71.7

Alcosorb is a dehydrated gel which, if a few grains are put onto the dibber hole post drilling, they swell when wetted, maintain moisture and protect the seed in a variety of ways. In this trial it had no effect upon rate or final emergence. There is an indication in the Table that under plastic seedlings have a higher mortality rate post emergence and pre polythene removal. This needs further investigation to see if it is a real effect or not. On this occasion the Stanhay-established crop under polythene had very rapid and uniform emergence.

2. Fresh weight of treatment samples at the end of May

These were done on 26 May and the results are presented in Table 2. These show that the transplants, not surprisingly, were by far the heaviest and therefore largest plants and when considered along with the results referred to in section 3 then there is a slight indication that the Stanhay plants were larger than those produced from seed put in with the Dibber drill.

Table 2 Fresh weights of 10 plants of each treatment taken on 26 May

Treatment	Fresh weight of 10 plants - mean of 3 reps - (g)
Dibber + Alcosorb + polythene	14.08
Dibber + Alcosorb no polythene	6.15
Dibber No Alcosorb + polythene	15.37
Dibber No Alcosorb no polythene	7.09
Stanhay + polythene	19.61
Stanhay No polythene	9.28
Transplants	48.66

3. Photocopies of seedlings on three occasions

These were done on 7, 15 and 26 May. The results for the first two are presented in Appendix 1 differences on 26 May are apparent from the data in Table 2. The results show that the polythene covers had an effect on the growth rate of onions and, in this trial, the Stanhay drilled crop seems to establish better and respond more to the polythene than the Dibber drilled crop.

4. Diedown estimates

By the time die down records were taken the trial was severely infected with white rot and so results for diedown counts should be regarded with great caution. As would be expected the transplanted crop matured first but whether the 8-15 day earlier harvest from Stanhay-established crops over Dibber drill established crops is real or a function of the white rot infection is unresolved. The results are presented in Table 3.

Table 3 Date of 80% diedown of treatments

Cover	Establishment Method			
	Transplant	Dibber + Alco	Dibber	Stanhay
Uncovered	12 Aug	3 Sept	7 Sept	26 Aug
Polythene covered	-	8 Sept	8 Sept	24 Aug
SED (30 df) = ± 1.3 days				

5. Yield data

The yield data is presented in Table 4 but is not commented on as the white rot infection rendered it totally meaningless.

Table 4 Yield data of treatments

Cover	Establishment method			
	Transplant	Dibber + Alco	Dibber	Stanhay
Uncovered	6.48	12.24	13.00	11.37
Polythene covered	-	5.85	3.77	14.51
SED (30df) = ± 1.317				

Conclusions

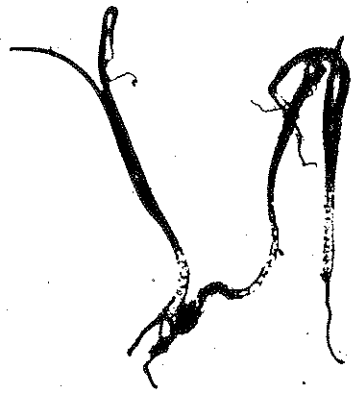
No sensible conclusions can be drawn from this trial.

APPENDIX i

PHOTOCOPIES OF ONION SEEDLINGS

ON TWO OCCASIONS

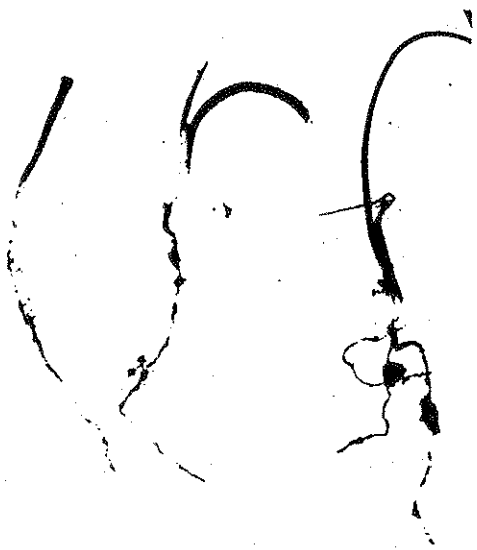
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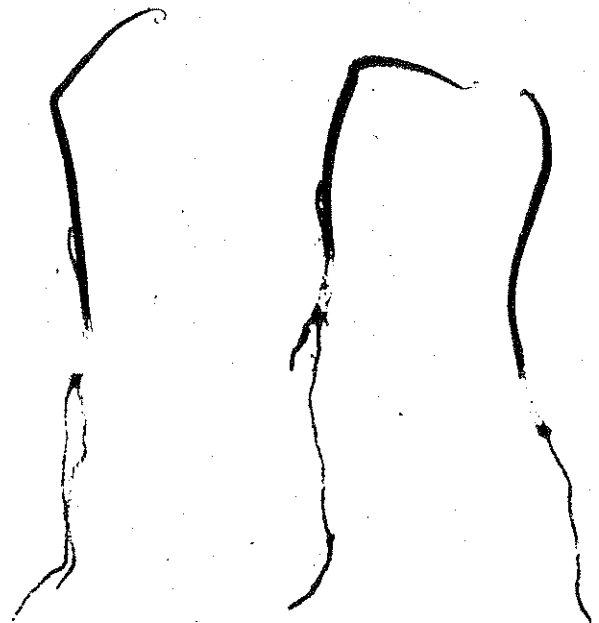
DIBBER + ALCOSORB



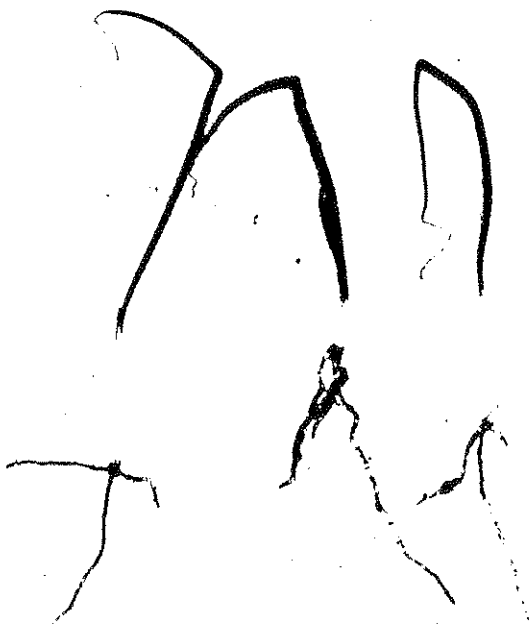
DIBBER + ALCOSORB + POLYTHENE



DIBBER



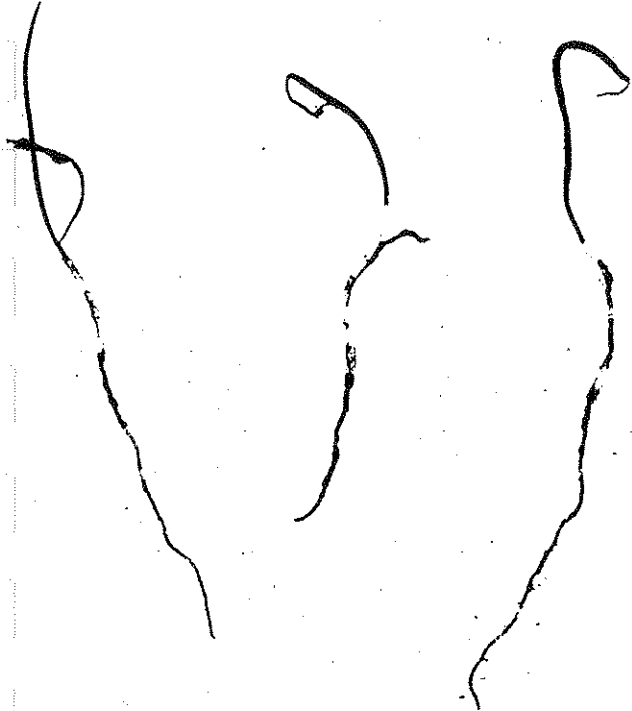
DIBBER + POLYTHENE



STANHAY



STANHAY + POLYTHENE



DIBBER + ALCOSORB



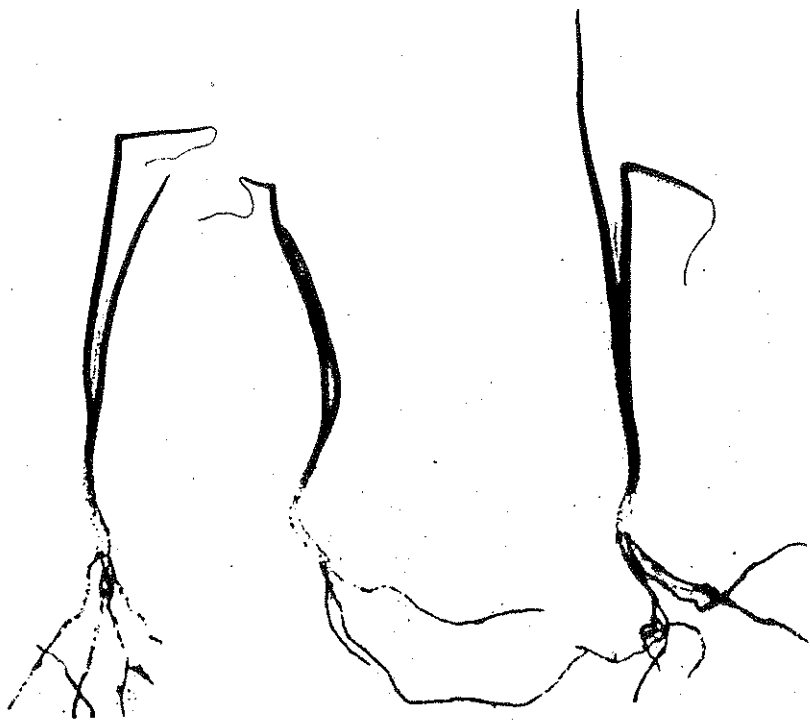
DIBBER + ALCOSORB + POLYTHENE



DIBBER



DIBBER + POLYTHENE



STANHAY



STANHAY + POLYTHENE