

A REPORT TO THE HORTICULTURAL DEVELOPMENT COUNCIL
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EVALUATION OF FUNGICIDES APPLIED
AS SEED TREATMENTS, HV SPRAYS
OR GRANULES FOR THE CONTROL
OF CAVITY SPOT IN SUSCEPTIBLE
AND TOLERANT CARROT CULTIVARS

FINAL REPORT

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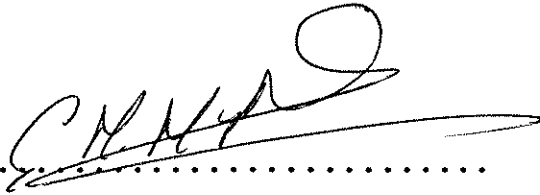
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Authentication

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.

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Evaluation of fungicides applied as seed treatments, HV sprays or granules for the control of cavity spot in susceptible and tolerant carrot cultivars.

Relevance to Growers and Practical Application

A three year trials programme on two sites (HRI Stockbridge House and ADAS Arthur Rickwood) evaluated the effectiveness of metalaxyl based seed treatments, high volume sprays or granule applications of metalaxyl at various rates and timings and in a range of combination treatments on two carrot cultivars with contrasting resistance ratings against cavity spot.

Disease levels were variable during the three year programme. In 1990/91 cavity spot occurred at negligible levels whereas in 1991/92 and 1992/93 levels were much higher and valuable information was gained regarding the relative effectiveness of the treatments included in the programme.

The most striking effect throughout the trial period was between the cultivars chosen in the study. Disease levels in the cv. Nanco (provisional NIAB rating 2) were consistently higher in 1991/92 and 1992/93 whereas the cv. Nandor (provisional NIAB rating 6) were significantly lower. The reduction in disease incidence due to the variety was greater in both years than that achieved with the commercial application of Fubol 58WP (12 kg/ha) on the susceptible cultivar Nanco.

Disease control with metalaxyl was relatively poor in this trials series even using the standard 'commercial' treatment of 12 kg product/ha within six weeks of drilling. A satisfactory explanation for this reduced effectiveness has not been found though various hypotheses are proposed.

Metalaxyl applied to the seed at significantly higher rates than on the commercially available Polycote Prime treatment was not phytotoxic and at one site gave control of cavity spot equivalent

to the commercial field application. At other sites the seed treatments were less effective. An explanation for this variable control is suggested.

Metalaxyl applied as a granular formulation (A5529C), omitting the mancozeb component of Fubol 58WP, was as effective as the current commercial recommendation of Fubol 58WP in this trials programme and provides further evidence that the dithiocarbamate component in the commercial formulated mixture is unnecessary. It is anticipated that the granular formulation (A5529C) will replace Fubol 58WP as the primary commercial product for cavity spot control in the future.

Finally, in a bid to determine whether cavity spot continues to develop during the overwintering phase, the number of cavity spot lesions on each root was counted for the first time alongside the standard NIAB 0-5 assessment for incidence and severity. By counting lesions in the autumn and again the following spring, it was possible to determine whether new lesions had occurred or whether existing lesions had merely enlarged. On the basis of the results obtained, whilst not conclusive, it is suggested that the observed increase in cavity spot reported in commercial crops overwinter is due to existing lesions enlarging not new infections.

Introduction

Cavity spot, caused primarily by the soil-borne fungus *Pythium violae*, remains the most important disease of carrot crops in the UK.

Fubol 58WP containing metalaxyl and mancozeb is used widely throughout the industry and has provided a very effective control measure for almost ten years. When the product was first used for cavity spot control it proved to be remarkably effective, a single application shortly after drilling giving ca. 100% control (mineral soils) even in crops overwintered and harvested in March-April the following year (McPherson, 1991).

Whilst this level of control is still occasionally achieved it is widely recognised that, more generally, the effectiveness of the treatment has deteriorated and cavity spot suppression of around 50%-75% is now more commonplace. The precise reason for the declining performance of the product is uncertain. Metalaxyl resistance in populations of *P. violae* has not been detected though this cannot be ruled out entirely. Enhanced degradation of metalaxyl has been demonstrated in some soils though no specific study on the carrot crop has been undertaken to determine whether this is the primary cause of the relatively poor response of the product. Rainfall patterns have been high in some seasons and as metalaxyl is a particularly mobile molecule, it may simply have been leached out from the region of the soil profile where it is required to exert an effect during the critical period of *Pythium* activity.

The mancozeb component in the formulated product plays little or no part in the control of *P. violae* but has been demonstrated to adversely affect other beneficial organisms in the soil (White et al., 1992). The destruction of natural antagonists in the soil with continued use of the product may enhance the activity of *P. violae* thereby putting greater pressure on the fungicide metalaxyl to provide effective control. Also, whilst *P. violae* is

the primary incitant of cavity spot, other species, notably *P. sulcatum*, have been demonstrated to cause similar symptoms in some situations (Lyons & White, 1992). This latter fungus does not respond to metalaxyl treatment and therefore perhaps at those sites where cavity spot persists following metalaxyl treatment *Pythium* species other than *P. violae* may be responsible for the symptoms.

Previous investigations have indicated that carrot cultivars differ in their relative susceptibility to cavity spot (Sweet *et al.*, 1986). If resistance/tolerance to cavity spot is available it could be valuable in an integrated approach to disease control. It is possible that fungicide use could be significantly reduced where cultivars with a high level of tolerance to *Pythium* infection are grown. Further information is required in this respect.

It is frequently claimed that cavity spot increases overwinter and yet fungicide programmes applied prior to strawing down have generally been ineffective.

Previous HDC funded studies on cavity spot have assessed cavity spot on a NIAB severity score which unfortunately cannot discriminate between enlargement of existing lesions, perhaps as a result of secondary colonisation, and new lesion formulation. In this trials series the crops were again assessed before and after overwintering but, in addition to the NIAB assessment, the lesion numbers on each root were also counted at each harvest.

The primary aims of this investigation were therefore:

- * to identify whether varieties differed in their susceptibility to cavity spot;
- * to determine the ongoing effectiveness of metalaxyl for cavity spot control either as an overall field application or at reduced rates in band treatments;
- * to evaluate a granular formulation of metalaxyl, omitting the mancozeb component of Fubol 58WP to determine whether effective control can be maintained;
- * to evaluate various rates and methods of application of metalaxyl granules to optimise their performance;
- * to investigate whether metalaxyl applied as a seed treatment can effectively suppress cavity spot;
- * to determine whether new infections occur overwinter or whether the perceived increase is due to an enlargement of existing lesions due to secondary colonisation by other fungi and bacteria.

Materials and Methods

Sites

The trials were located at HRI Stockbridge House and at ADAS Arthur Rickwood.

Soil Types

The trials at Stockbridge House were on a medium sandy loam whereas those at Arthur Rickwood were on an organic 'fen' peat (25-35% organic matter).

Trial Design

Trials at both sites in each year were fully replicated with two varieties x 12 treatments (13 in 1992/93) with four replicate blocks in a factorial design. Seed were drilled on a bed system with either two or four rows to obtain a plant stand approaching 120 plants/m² for the pre-pack market. Plot size varied between trials but was not less than 10 m² in each year.

Cultivars

The cvs Nanco (NIAB rating 2) and Nandor (NIAB rating 6) were used at both sites in each year of the study.

Fungicide Treatments

- *1. Rovral/thiram SD only.
2. Polycote Prime SD only.
3. Experimental[#] Seed Treatment 1 only.
4. Experimental[#] Seed Treatment 2 only.
- *5. Fubol 58WP at 12 kg product/500 l water/treated ha applied overall immediately post-drilling.
- *6. Fubol 58WP at 12 kg product/500 l water/treated ha applied as a 15 cm (6") band application immediately post-drilling.
- *7. Fubol 58WP at 12 kg product/500 l water/treated ha applied as a 7 cm (3") band application immediately post-drilling.
8. Experimental Seed Treatment 1 + Fubol 58WP at 3 kg product/500 l water/ha 6 weeks post-drilling applied as a band application (3").
9. Experimental Seed Treatment 2 + Fubol 58WP at 3 kg product/500 l water/ha 6 weeks post-drilling applied as a band application (3").
- *10. 5% metalaxyl (A5529 C) at 25 kg product/ha applied prior to drilling by incorporation into the top 2-5 cm of soil.
- *11. 5% metalaxyl (A5529 C) applied at 10 kg product/ha at drilling down the row.
- *12. 5% metalaxyl (A5529 C) applied at 5 kg product/ha at drilling down the row.
- *13. 5% metalaxyl (A5529 C) applied at 25 kg product/treated ha applied as a 15 cm band prior to drilling by incorporating in the top 2-5 cm soil.

* Rovral/thiram seed treatment used.

[#] Seed treatments, carried out by Seedcote Systems, Thetford, Norfolk aimed to achieve increased metalaxyl loading on the seed of 5 and 10 times as compared with Polycote Prime. However, subsequent determination revealed significantly higher loadings of 15 and 30 times that of Polycote Prime. Other components of the Polycote Prime seed treatment were unchanged.

+ 1992/93 season only.

Fungicide Application

High volume fungicide applications were made using an Oxford Precision sprayer modified to operate with compressed air at Stockbridge House and with a Knapsack sprayer (Cooper Peglar: CP15/CP20) at Arthur Rickwood, the boom widths modified to cater for the various band or whole plot applications. Granule applications in Treatments 10 and 13 were made by hand using pepper pot shakers to evenly distribute the granules over the plot prior to incorporation. The granules were subsequently incorporated up to a depth of 2-3 cm by raking over the plot surface. In Treatments 11 and 12 the granules were applied down the row using an Oyjard drill cone seeder, which allows a known quantity of seed to be applied evenly along each row. The correct quantity of granules/row was emptied into each of the four cone seed hoppers and released into the segments. This was then repeated with the seed before drilling each plot. This technique allowed both seed and granule to be applied accurately and uniformly. Seed treatments were carried out by Seedcote Systems, Thetford, Norfolk.

Emergence Counts

Emergence counts were carried out from 100% emergence by randomly selecting either 2 or 4 x 1/2 m row lengths and counting the individual seedlings.

In Crop Monitoring

Regular samples of carrots were taken from the trials from the pencil stage onwards to monitor the development of cavity spot and to predict the appropriate harvest date for disease assessments.

Disease Assessments

Two harvests were conducted at each site in each year, one in November prior to strawing down for winter, the other after overwintering in March. A measured plot length (0.5-1.0 m) was harvested and a random 50 or 100 root sample assessed for cavity spot using the NIAB scale of severity (Sweet *et al.*, 1986). In addition at each assessment date the lesion number/root were counted.

Yield Assessments

The crop yield was determined at the first harvest in the autumn only. This comprised total or marketable yield from a given plot area (a minimum of 2 m plot length).

Crop Diaries

HRI Stockbridge House

	<u>1990/91</u>	<u>1991/92</u>	<u>1992/93</u>
Soil applied granule application (T10-13)	17 May	9 May	11 May
Drilling	17 May	9 May	11 May
Application of Fubol 58WP (T5-7)	23 May	16 May	12 May
Application of Fubol 58WP (T8-9)	26 Jun	26 Jun	22 Jun
Autumn assessment	7 Nov	21 Nov	11 Nov
Strawed down	16 Nov	24 Nov	14 Nov
Spring assessment (overwintered)	18 Mar	10 Mar	9 Mar

ADAS Arthur Rickwood

	<u>1990/91</u>	<u>1991/92</u>	<u>1992/93</u>
Soil applied granule application (T10-13)	14 May	14 May	14 May
Drilling	14 May	14 May	14 May
Application of Fubol 58WP (T5-7)	17 May	17 May	14 May
Application of Fubol 58WP (T8-9)	3 Jul	28 Jun	13 Jul
Autumn assessment	7 Nov	25 Nov	23 Nov
Strawed down	16 Nov	28 Nov	30 Nov
Spring assessment (overwintered)	12 Mar	18 Mar	10 Mar

Cultural Details

All crops were maintained to a good commercial standard by agronomy personnel at the two sites. A range of herbicides and insecticides were applied as necessary to maintain effective weed and pest control respectively and to provide an adequate yield. Details are provided in Appendix I. No fungicides, other than the experimental treatments listed were applied to the trials.

Statistical Analysis

All data were subjected to an analysis of variance in collaboration with HRI, Biometrics Department. Where appropriate the variates were analysed after transformation to improve the homogeneity of variances. Different transformations eg \log_e , square root and angular transformations were conducted as necessary.

Results

Emergence Counts

None of the treatments had a consistent significant effect on seedling emergence in this trials series (Tables 1, 11, 21, 31, 41 and 51), though at ADAS, Arthur Rickwood in 1992/93 emergence was impaired slightly following the high rate of metalaxyl applied to the seed and the high dose of metalaxyl granules (A5529C) applied overall. The only consistent significant effect was between the two cultivars evaluated where large differences in emergence occurred. In most trials Nanco had a higher emergence than Nandor though at ADAS, Arthur Rickwood in 1990/91 the reverse occurred.

Cultivars

The choice of cultivar provided the most striking contrast throughout the three years of this study. Nanco, with a provisional NIAB rating of 2, had a significantly higher incidence and severity of cavity spot than the cv. Nandor with a NIAB provisional rating of 6, in all six trials conducted in this study (Tables 2-5, 12-15, 22-25, 32-35, 42-45 and 52-55). In most years the yield from the cv. Nanco was significantly higher than Nandor (except SH in 1990/91), though the percentage of marketable roots was significantly reduced due to the high level of cavity spot in this seemingly susceptible cultivar, particularly in the latter years of the study (Tables 8-9, 18-19, 28-29, 38-39, 48-49 and 58-59).

Disease Incidence

In 1991/92 and 1992/93 a moderate to high incidence of cavity spot was recorded (Tables 22, 32, 42 and 52). On the susceptible cultivar Nanco infection levels at the first harvest ranged from 30-92% roots affected (SH:1991/92 77%; AR: 1991/92 30%; SH:1992/93 92% and AR:1992/93 56%). Following overwintering the percentage roots affected by cavity spot was lower (Tables 23, 33, 43 and 53) at three of the four trial sites (SH:1991/92 62%; AR:1991/92 44%; SH:1992/93 78% and AR:1992/93 51%). Only at ADAS, Arthur Rickwood

in 1991/92 (Tables 32 and 33) was a higher incidence of infection noted (from 30 to 44%) and it is doubtful if this was a significant effect.

Treatment with the standard fungicide, Fubol 58WP, as a control in this trials series provided only a moderate suppression of the disease and provides further evidence that the performance of this treatment is deteriorating.

Seed treatment with Polycote Prime had a slight effect in reducing the incidence and severity of cavity spot in some trials but clearly cannot be relied upon for the control of this serious disease. However, application of the same seed treatment but with a significantly increased metalaxyl loading (see Materials and Methods) provided effective control of cavity spot, equivalent to that achieved with the standard commercial application of Fubol 58WP, but in some trials only (Tables 22-23 and 32). At HRI, Stockbridge House in 1991/92 the higher application of the experimental seed treatment reduced the incidence of cavity spot on the cultivar Nanco from 76.5% to 27.0% roots affected (Table 22) and this was directly comparable to Fubol 58WP applied at 12 kg product/ha post-drilling. More interestingly the control persisted over winter (Table 23) and was marginally, though not significantly, better than the overall field treatment with Fubol 58WP.

The use of band applications of Fubol 58WP has been shown in previous trials to provide effective control particularly on mineral soils. In this trials series the 15 cm band appeared to give control equivalent to an overall application in most trials whereas the performance of a narrower 7 cm band was much less effective. The combined treatment (Treatment 9) which included an increased metalaxyl loading on the seed followed by Fubol 58WP at 3 kg/ha in a 7 cm band 6 weeks after drilling provided the most effective control in the trials conducted during 1991/92 (Tables 22-23 and 32-33).

The experimental granule formulation of metalaxyl (A5529C) applied either overall at 25 kg/ha, or at two reduced rates (5 and 10 kg/ha) down the row or as a 15 cm band application (1992/93 only) consistently provided control equivalent to the commercial application of Fubol 58WP. Whilst there were few significant differences between the various methods of application the lower rate (5 kg/ha) applied in the row tended to give inferior control but at some sites only.

Disease Severity

Whilst the incidence of cavity spot, ie number or percentage of roots affected, provides some measure of the control provided by the various treatments the severity of infection is arguably more important. If all the roots in a particular crop were infected with a single small (<1 mm) cavity it would result in 100% root infection yet the crop may still be marketed. In contrast if 90% of the roots remained healthy but the remaining roots each had a few lesions 10% of the crop would be unmarketable. For this reason the roots in each trial were scored for cavity spot according to a scale of severity produced by NIAB. This not only provides a measure of the number of root infected but more importantly determines the severity of the infection. From this 0-5 score a disease index (0-100) was calculated; the higher the figure the higher is both the incidence and the severity of the disease.

Previous studies on cavity spot have occasionally demonstrated an increased disease index following overwintering. However, this has always been difficult to interpret as the higher index could either be due to an increase in size of existing lesions or more importantly due to an increase in the number of lesions/root. For this reason the number of lesions/root were counted in each treatment both before and after overwintering and these results are presented (Tables 6-7, 16-17, 26-27, 36-37, 46-47 and 56-57).

Perhaps not surprisingly, both the disease index and the lesion number/root were significantly lower in the cv. Nandor than they were in the cv. Nanco providing further support to the provisional NIAB rating. More interestingly, in the two years when disease levels were moderate to high (1991/92 and 1992/93) the disease index and, more importantly, the lesion number per root did not increase during the overwintering phase in three out of the four trials. At ADAS, Arthur Rickwood in 1991/92, however, the index did increase from 12.1 to 20.7 and the lesion no./root increased from 0.54 to 0.86.

Most of the fungicide treatments applied were effective in reducing both the disease severity ie lesion size and the lesion number/root and the results correlated very closely with those described for disease incidence above.

Yield

Because cavity spot is a quality defect it is unlikely that the total bulk yield would be affected by *P. violae* infection and this was generally the case in this trials series (Tables 10,20, 30, 40 and 50). None of the treatments significantly reduced total yield and it is therefore reasonable to conclude therefore that none of the applied treatments were phytotoxic.

Table 1: Germination assessment of the two varieties at 100% emergence on 26 June
Stockbridge House 1990/91

Treatment	Mean Number of Plants Emerged/one metre row		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	65.8	39.5	52.6
2. Polycote Prime SD	73.8	56.5	65.1
3. Experimental SD 1	71.0	59.2	65.1
4. Experimental SD 2	70.5	51.0	60.7
5. Fubol 58WP* [overall]	76.0	51.0	63.5
6. Fubol 58WP* [15 cm band]	56.0	52.5	54.2
7. Fubol 58WP* [7 cm band]	59.7	58.2	59.0
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	67.0	51.0	59.0
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	58.5	52.7	55.6
10. A5529C* [25 kg incorporated]	63.0	38.2	50.6
11. A5529C* [10 kg inc. in row]	74.0	43.5	58.7
12. A5529C* [5 kg inc. in row]	67.3	51.0	59.1
Mean	66.9	50.4	58.6

SED (69 df) for comparing:

cultivar means 3.43 (LSD 5% 6.86)

treatment means 8.41 (LSD 5% 16.82) NSD

cultivar x treatment means 11.90 (LSD 5% 22.80) NSD

* Rovral/Thiram seed dressing

Fubol 58WP applied 6 weeks post-drilling

* 5% metalaxyl granule formulation

NSD No significant difference at the 5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 2: Percentage roots infected with cavity spot at Harvest I on 7 November
Stockbridge House 1990/91

Treatment	% Roots with Cavity Spot at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	5.50 (13.23)	3.50 (10.39)	4.50 (11.81)
2. Polycote Prime SD	5.00 (12.83)	4.75 (12.44)	4.88 (12.64)
3. Experimental SD 1	5.75 (12.65)	3.50 (10.19)	4.63 (11.42)
4. Experimental SD 2	1.75 (7.40)	4.00 (11.15)	2.88 (9.28)
5. Fubol 58WP* [overall]	9.00 (17.03)	3.00 (9.20)	6.00 (13.12)
6. Fubol 58WP* [15 cm band]	5.25 (13.15)	3.00 (9.70)	4.13 (11.42)
7. Fubol 58WP* [7 cm band]	4.50 (12.10)	5.25 (12.52)	4.88 (12.31)
8. Exp. SD 1 + Fubol [3 kg [†] /7 cm band]	7.50 (15.57)	3.25 (9.93)	5.38 (12.75)
9. Exp. SD 2 + Fubol [3 kg [†] /7 cm band]	4.50 (12.10)	6.00 (13.50)	5.25 (12.80)
10. A5529C** [25 kg incorporated]	3.75 (10.67)	5.50 (13.38)	4.63 (12.02)
11. A5529C** [10 kg inc. in row]	7.25 (15.13)	3.00 (9.65)	5.13 (12.39)
12. A5529C** [5 kg inc. in row]	3.50 (10.64)	3.00 (9.51)	3.25 (10.07)
Mean	5.27 (12.71)	3.98 (10.96)	4.63 (11.83)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.77) (LSD 5% 1.55)
(1.90) (LSD 5% 3.79) NSD
(2.68) (LSD 5% 5.36) NSD^o

* Rovral/Thiram seed dressing

† Fubol 58WP applied 6 weeks post-drilling

‡ 5% metalaxyl granule formulation

^o Significant difference at the 8.2% level of probability (P = 0.082)

Angular transformations in parentheses

NSD No significant difference at the 5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 3: Percentage roots infected with cavity spot at Harvest II on 18 March
Stockbridge House 1990/91.

Treatment	% Roots with Cavity Spot at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	15.25 (22.2)	9.50 (17.3)	12.4 (19.7)
2. Polycote Prime SD	39.25 (38.2)	9.00 (16.6)	24.1 (27.4)
3. Experimental SD 1	27.50 (28.8)	5.50 (13.2)	16.5 (21.0)
4. Experimental SD 2	25.50 (26.1)	6.25 (13.9)	15.9 (20.0)
5. Fubol 58WP* [overall]	8.25 (15.6)	6.50 (14.4)	7.4 (15.0)
6. Fubol 58WP* [15 cm band]	8.00 (16.0)	8.00 (15.5)	8.0 (15.8)
7. Fubol 58WP* [7 cm band]	21.75 (23.7)	6.00 (13.7)	13.9 (18.7)
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	23.00 (28.0)	7.25 (15.1)	15.1 (21.6)
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	9.00 (16.9)	8.00 (15.5)	8.5 (16.2)
10. A5529C** [25 kg incorporated]	8.25 (16.6)	7.75 (15.2)	8.0 (15.9)
11. A5529C** [10 kg inc. in row]	15.00 (22.2)	6.25 (12.1)	10.6 (17.2)
12. A5529C** [5 kg inc. in row]	11.50 (18.9)	8.00 (16.1)	9.8 (17.5)
Mean	17.69 (22.8)	7.33 (14.9)	12.51 (18.8)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(2.17) (LSD 5% 4.34)
(5.30) (LSD 5% 10.60) NSD
(7.50) (LSD 5% 15.00) NSD

* Rovral/Thiram seed dressing
Fubol 58WP applied 6 weeks post-drilling
+ 5% metalaxyl granule formulation

Angular transformations in parentheses
NSD No significant difference at the
5% level of probability (P = 0.05)
All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Table 4: Determination of cavity spot index at Harvest I on 7 November
Stockbridge House 1990/91.

Treatment	Cavity Spot Index at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	1.30	0.85	1.08
2. Polycote Prime SD	1.05	0.95	1.00
3. Experimental SD 1	1.20	0.70	0.95
4. Experimental SD 2	0.35	0.85	0.60
5. Fubol 58WP* [overall]	2.00	0.60	1.30
6. Fubol 58WP* [15 cm band]	1.30	0.60	0.95
7. Fubol 58WP* [7 cm band]	0.90	1.05	0.98
8. Exp. SD 1 + Fubol [3 kg#/7 cm band]	1.50	0.70	1.10
9. Exp. SD 2 + Fubol [3 kg#/7 cm band]	1.00	1.20	1.10
10. A5529C** [25 kg incorporated]	0.75	1.20	0.98
11. A5529C** [10 kg inc. in row]	1.55	0.65	1.10
12. A5529C** [5 kg inc. in row]	0.70	0.60	0.65
Mean	1.13	0.83	0.98

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

0.12 (LSD 5% 0.24)
0.30 (LSD 5% 0.60) NSD
0.42 (LSD 5% 0.84)

* Rovral/Thiram seed dressing

NSD No significant difference at the
5% level of probability (P = 0.05)

Fubol 58WP applied 6 weeks post-drilling

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

+ 5% metalaxyl granule formulation

Table 5: Determination of cavity spot index at Harvest II 18 March
Stockbridge House 1990/91

Treatment	Cavity Spot Index at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	4.75 (1.21)	2.40 (0.62)	3.57 (0.92)
2. Polycote Prime SD	18.05 (2.12)	2.50 (0.70)	10.28 (1.41)
3. Experimental SD 1	13.60 (1.62)	1.15 (0.01)	7.38 (0.81)
4. Experimental SD 2	10.25 (0.98)	1.60 (0.31)	5.92 (0.64)
5. Fubol 58WP* [overall]	2.15 (0.33)	1.60 (0.35)	1.87 (0.34)
6. Fubol 58WP* [15 cm band]	1.95 (0.55)	1.90 (0.36)	1.92 (0.46)
7. Fubol 58WP* [7 cm band]	8.00 (0.78)	1.30 (0.09)	4.65 (0.43)
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	9.10 (1.95)	1.75 (0.50)	5.43 (1.22)
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	2.80 (0.76)	1.80 (0.23)	2.30 (0.50)
10. A5529C** [25 kg incorporated]	1.70 (0.50)	1.90 (0.27)	1.80 (0.39)
11. A5529C** [10 kg inc. in row]	4.60 (1.34)	1.55 (0.47)	3.07 (0.91)
12. A5529C** [5 kg inc. in row]	4.10 (0.99)	1.80 (0.45)	2.95 (0.72)
Mean	6.75 (1.09)	1.77 (0.36)	4.26 (0.73)

SED (68 df[#]) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.20) (LSD 5% 0.41)
(0.50) (LSD 5% 2.00) NSD
(0.71) (LSD 5% 1.41) NSD

- * Rovral/Thiram seed dressing
 - # Fubol 58WP applied 6 weeks post-drilling
 - + 5% metalaxyl granule formulation
 - One missing value
- Log_e transformations in parentheses
NSD No significant difference at the 5% level of probability (P = 0.05)
All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 6: Mean number of cavity spot lesions/root at Harvest I on 7 November
Stockbridge House 1990/91.

Treatment	Mean Number of Lesions/Root at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	0.08	0.04	0.06
2. Polycote Prime SD	0.07	0.05	0.06
3. Experimental SD 1	0.07	0.04	0.05
4. Experimental SD 2	0.02	0.05	0.03
5. Fubol 58WP* [overall]	0.11	0.03	0.07
6. Fubol 58WP* [15 cm band]	0.08	0.04	0.06
7. Fubol 58WP* [7 cm band]	0.05	0.05	0.05
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	0.09	0.05	0.07
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	0.06	0.06	0.06
10. A5529C** [25 kg incorporated]	0.04	0.07	0.05
11. A5529C** [10 kg inc. in row]	0.10	0.05	0.07
12. A5529C** [5 kg inc. in row]	0.04	0.03	0.03
Mean	0.07	0.05	0.06
SED (69 df) for comparing: cultivar means	0.007 (LSD 5% 0.014)		
treatment means	0.017 (LSD 5% 0.034) NSD		
cultivar x treatment means	0.024 (LSD 5% 0.048) NSD ^o		

* Rovral/Thiram seed dressing

Fubol 58WP applied 6 weeks post-drilling

^o 5% metalaxyl granule formulation

^o Significant difference at the 9.1% level of probability (P = 0.091)

NSD No significant difference at the 5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 7: Mean number of cavity spot lesions/root at Harvest II on 18 March
Stockbridge House 1990/91.

Treatment	Mean Number of Lesions/Root at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	0.28 (-1.61)	0.18 (-2.09)	0.23 (-1.85)
2. Polycote Prime SD	1.24 (-0.59)	0.14 (-2.20)	0.69 (-1.40)
3. Experimental SD 1	1.09 (-1.39)	0.08 (-2.70)	0.58 (-2.04)
4. Experimental SD 2	0.61 (-1.94)	0.11 (-2.50)	0.36 (-2.22)
5. Fubol 58WP* [overall]	0.10 (-2.69)	0.09 (-2.60)	0.09 (-2.64)
6. Fubol 58WP* [15 cm band]	0.27 (-2.11)	0.10 (-2.48)	0.18 (-2.29)
7. Fubol 58WP* [7 cm band]	1.23 (-1.99)	0.10 (-2.65)	0.67 (-2.32)
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	1.25 (-0.48)	0.12 (-2.20)	0.68 (-1.34)
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	0.31 (-1.98)	0.13 (-2.50)	0.22 (-2.24)
10. A5529C* [25 kg incorporated]	0.10 (-2.33)	0.11 (-2.60)	0.10 (-2.46)
11. A5529C* [10 kg inc. in row]	0.22 (-1.70)	0.08 (-2.39)	0.15 (-2.04)
12. A5529C* [5 kg inc. in row]	0.43 (-1.66)	0.10 (-2.46)	0.26 (-2.06)
Mean	0.59 (-1.70)	0.11 (-2.45)	0.35 (-2.08)

SED (68 df[■]) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.242) (LSD 5% 0.484)
(0.592) (LSD 5% 1.184) NSD
(0.838) (LSD 5% 1.676) NSD

* Rovral/Thiram seed dressing

Fubol 58WP applied 6 weeks post-drilling

+ 5% metalaxyl granule formulation

■ One missing value

Log_e transformations in parentheses

NSD No significant difference at the 5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 8: Percentage roots marketable at Harvest I on 7 November
Stockbridge House 1990/91.

Treatment	% Roots Marketable at Harvest I			Mean
	Nanco	Nandor	Mean	
1. Rovral/Thiram SD*	99.75 (88.57)	100.00 (90.00)	99.88 (89.28)	
2. Polycote Prime SD	100.00 (90.00)	100.00 (90.00)	100.00 (90.00)	
3. Experimental SD 1	100.00 (90.00)	100.00 (90.00)	100.00 (90.00)	
4. Experimental SD 2	100.00 (90.00)	100.00 (90.00)	100.00 (90.00)	
5. Fubol 58WP* [overall]	100.00 (90.00)	100.00 (90.00)	100.00 (90.00)	
6. Fubol 58WP* [15 cm band]	100.00 (90.00)	100.00 (90.00)	100.00 (90.00)	
7. Fubol 58WP* [7 cm band]	100.00 (90.00)	100.00 (90.00)	100.00 (90.00)	
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	100.00 (90.00)	100.00 (90.00)	100.00 (90.00)	
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	100.00 (90.00)	100.00 (90.00)	100.00 (90.00)	
10. A5529C* [25 kg incorporated]	100.00 (90.00)	100.00 (90.00)	100.00 (90.00)	
11. A5529C* [10 kg inc. in row]	100.00 (90.00)	100.00 (90.00)	100.00 (90.00)	
12. A5529C* [5 kg inc. in row]	100.00 (90.00)	100.00 (90.00)	100.00 (90.00)	
Mean	99.98 (89.88)	100.00 (90.00)	99.99 (89.94)	

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.12) (LSD 5% 0.24) NSD
(0.29) (LSD 5% 0.59) NSD
(0.41) (LSD 5% 0.83) NSD

* Rovral/Thiram seed dressing

Fubol 58WP applied 6 weeks post-drilling

+ 5% metalaxyl granule formulation

Angular transformations in parentheses

NSD No significant difference at the
5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Table 9: Percentage roots marketable at Harvest II on 18 March
Stockbridge House 1990/91.

Treatment	% Roots Marketable at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	97.75 (84.46)	99.50 (87.97)	98.63 (86.21)
2. Polycote Prime SD	85.00 (72.76)	99.00 (85.93)	92.00 (79.35)
3. Experimental SD 1	86.75 (72.25)	100.00 (90.00)	93.38 (81.13)
4. Experimental SD 2	90.75 (77.07)	99.75 (88.57)	95.25 (82.82)
5. Fubol 58WP* [overall]	99.75 (88.57)	100.00 (90.00)	99.88 (89.28)
6. Fubol 58WP* [15 cm band]	99.50 (87.13)	99.75 (88.57)	99.63 (87.85)
7. Fubol 58WP* [7 cm band]	94.25 (81.57)	100.00 (90.00)	97.13 (85.79)
8. Exp. SD 1 + Fubol [3 kg [†] /7 cm band]	93.75 (78.35)	99.50 (87.97)	96.63 (83.16)
9. Exp. SD 2 + Fubol [3 kg [†] /7 cm band]	99.25 (87.51)	100.00 (90.00)	99.63 (88.70)
10. A5529C** [25 kg incorporated]	100.00 (90.00)	99.50 (87.97)	99.75 (88.98)
11. A5529C** [10 kg inc. in row]	98.75 (85.68)	100.00 (90.00)	99.38 (87.84)
12. A5529C** [5 kg inc. in row]	97.25 (83.40)	100.00 (90.00)	98.63 (86.70)
Mean	95.23 (82.40)	99.75 (88.91)	97.49 (85.65)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(1.57) (LSD 5% 3.14)
(3.84) (LSD 5% 7.78) NSD
(5.43) (LSD 5% 10.87) NSD

* Rovral/Thiram seed dressing

† Fubol 58WP applied 6 weeks post-drilling

* 5% metalaxyl granule formulation

Angular transformations in parentheses

NSD No significant difference at the 5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 10: Determination of crop yield (t/ha) at Harvest I on 7 November
Stockbridge House 1990/91.

Treatment	Total Yield at Harvest I (t/ha)		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	113.7	100.4	107.0
2. Polycote Prime SD	112.4	110.7	111.6
3. Experimental SD 1	117.5	105.6	111.6
4. Experimental SD 2	109.3	97.0	103.1
5. Fubol 58WP* [overall]	106.0	92.5	99.3
6. Fubol 58WP* [15 cm band]	119.8	99.0	109.4
7. Fubol 58WP* [7 cm band]	121.2	106.6	113.9
8. Exp. SD 1 + Fubol [3 kg [†] /7 cm band]	123.8	105.3	114.6
9. Exp. SD 2 + Fubol [3 kg [†] /7 cm band]	110.0	109.1	109.5
10. A5529C** [25 kg incorporated]	113.4	95.5	104.4
11. A5529C** [10 kg inc. in row]	123.1	99.1	111.1
12. A5529C** [5 kg inc. in row]	120.1	97.4	108.7
Mean	115.9	101.5	108.9
SED (69 df) for comparing: cultivar means	2.49 (LSD 5% 4.98)		
treatment means	6.11 (LSD 5% 12.22) NSD		
cultivar x treatment means	8.64 (LSD 5% 17.28) NSD		

* Rovral/Thiram seed dressing

† Fubol 58WP applied 6 weeks post-drilling

* 5% metalaxyl granule formulation

NSD No significant difference at the
5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Table 11: Germination assessment of the two varieties at 100% emergence on 4 July
Arthur Rickwood EHF 1990/91.

Treatment	Mean Number of Plants Emerged/one metre row		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	118.63	134.25	126.44
2. Polycote Prime SD	128.50	130.25	129.37
3. Experimental SD 1	125.63	124.88	125.25
4. Experimental SD 2	107.38	125.13	116.25
5. Fubol 58WP* [overall]	125.13	132.13	128.62
6. Fubol 58WP* [15 cm band]	120.25	128.75	124.50
7. Fubol 58WP* [7 cm band]	126.25	121.38	123.81
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	127.00	126.88	126.94
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	119.63	128.25	123.94
10. A5529C** [25 kg incorporated]	122.75	127.75	125.25
11. A5529C** [10 kg inc. in row]	121.75	129.00	125.38
12. A5529C** [5 kg inc. in row]	125.13	129.13	127.13
Mean	122.33	128.15	125.24

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

1.916 (LSD 5% 3.832)
4.693 (LSD 5% 9.386) NSD
6.637 (LSD 5% 13.274) NSD

* Rovral/Thiram seed dressing

NSD No significant difference at the
5% level of probability (P = 0.05)

Fubol 58WP applied 6 weeks post-drilling

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

+ 5% metalaxyl granule formulation

Table 12: Percentage roots infected with cavity spot at Harvest I on 7 November
Arthur Rickwood EHF 1990/91.

Treatment	% Roots with Cavity Spot at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	2.50 (9.05)	4.25 (11.52)	3.38 (10.28)
2. Polycote Prime SD	2.75 (9.33)	1.25 (5.50)	2.00 (7.41)
3. Experimental SD 1	2.75 (9.44)	4.00 (11.02)	3.38 (10.23)
4. Experimental SD 2	3.25 (10.10)	5.75 (11.99)	4.50 (11.05)
5. Fubol 58WP* [overall]	4.75 (12.01)	3.50 (9.51)	4.13 (10.76)
6. Fubol 58WP* [15 cm band]	2.75 (7.76)	3.25 (10.04)	3.00 (8.90)
7. Fubol 58WP* [7 cm band]	5.25 (12.86)	4.25 (11.69)	4.75 (12.27)
8. Exp. SD 1 + Fubol [3 kg#/7 cm band]	4.00 (10.85)	3.75 (10.70)	3.88 (10.78)
9. Exp. SD 2 + Fubol [3 kg#/7 cm band]	3.50 (10.71)	4.00 (11.30)	3.75 (11.01)
10. A5529C* [25 kg incorporated]	2.50 (7.76)	4.00 (10.52)	3.25 (9.14)
11. A5529C* [10 kg inc. in row]	4.75 (12.44)	3.75 (9.09)	4.25 (10.77)
12. A5529C* [5 kg inc. in row]	2.50 (8.73)	2.25 (7.16)	2.38 (7.94)
Mean	3.44 (10.09)	3.67 (10.00)	3.55 (10.05)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.788) (LSD 5% 1.576) NSD
(1.930) (LSD 5% 3.860) NSD
(2.729) (LSD 5% 5.458) NSD

* Rovral/Thiram seed dressing

Angular transformations in parentheses

Fubol 58WP applied 6 weeks post-drilling

NSD No significant difference at the
5% level of probability (P = 0.05)

+ 5% metalaxyl granule formulation

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Table 13: Percentage roots infected with cavity spot at Harvest II on 12 March
Arthur Rickwood EHF 1990/91.

Treatment	% Roots with Cavity Spot at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	2.50 (8.85)	4.25 (11.27)	3.38 (10.06)
2. Polycote Prime SD	1.50 (5.75)	2.75 (8.98)	2.13 (7.37)
3. Experimental SD 1	2.00 (6.70)	1.00 (4.90)	1.50 (5.80)
4. Experimental SD 2	2.75 (8.41)	0.75 (3.47)	1.75 (5.94)
5. Fubol 58WP* [overall]	2.00 (6.70)	3.00 (9.79)	2.50 (8.24)
6. Fubol 58WP* [15 cm band]	0.75 (3.47)	2.50 (7.76)	1.63 (5.61)
7. Fubol 58WP* [7 cm band]	3.50 (10.26)	1.00 (5.74)	2.25 (8.00)
8. Exp. SD 1 + Fubol [3 kg#/7 cm band]	1.00 (3.93)	3.75 (9.97)	2.38 (6.95)
9. Exp. SD 2 + Fubol [3 kg#/7 cm band]	1.75 (6.35)	2.50 (10.24)	2.63 (8.30)
10. A5529C** [25 kg incorporated]	0.77 (4.30)	4.25 (10.19)	2.50 (7.25)
11. A5529C** [10 kg inc. in row]	2.00 (7.02)	2.00 (7.86)	2.00 (7.44)
12. A5529C** [5 kg inc. in row]	1.75 (7.40)	1.25 (4.53)	1.50 (5.96)
Mean	1.85 (6.59)	2.50 (7.89)	2.18 (7.24)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.907) (LSD 5% 1.814) NSD
(2.222) (LSD 5% 4.444) NSD
(3.143) (LSD 5% 6.286) NSD

* Rovral/Thiram seed dressing
Fubol 58WP applied 6 weeks post-drilling
+ 5% metalaxyl granule formulation

Angular transformations in parentheses
NSD No significant difference at the
5% level of probability (P = 0.05)
All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Table 14: Determination of cavity spot index at Harvest I on 7 November
Arthur Rickwood EHF 1990/91.

Treatment	Cavity Spot Index at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	0.70 (0.825)	1.00 (0.955)	0.85 (0.890)
2. Polycote Prime SD	1.00 (0.944)	0.30 (0.464)	0.65 (0.704)
3. Experimental SD 1	0.80 (0.887)	0.90 (0.905)	0.85 (0.896)
4. Experimental SD 2	0.80 (0.876)	1.15 (0.923)	0.98 (0.899)
5. Fubol 58WP* [overall]	1.45 (1.147)	0.95 (0.867)	1.20 (1.007)
6. Fubol 58WP* [15 cm band]	0.55 (0.601)	1.00 (0.945)	0.78 (0.773)
7. Fubol 58WP* [7 cm band]	1.50 (1.165)	1.00 (0.978)	1.25 (1.071)
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	1.15 (0.976)	0.90 (0.897)	1.03 (0.937)
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	0.90 (0.947)	0.90 (0.933)	0.90 (0.940)
10. A5529C* [25 kg incorporated]	0.60 (0.656)	0.80 (0.814)	0.70 (0.735)
11. A5529C* [10 kg inc. in row]	1.15 (1.064)	1.10 (0.836)	1.13 (0.950)
12. A5529C* [5 kg inc. in row]	0.55 (0.678)	0.55 (0.612)	0.53 (0.645)
Mean	0.93 (0.897)	0.88 (0.844)	0.90 (0.871)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.0731) (LSD 5% 0.1462) NSD
(0.1791) (LSD 5% 0.3582) NSD
(0.2532) (LSD 5% 0.5064) NSD

* Rovral/Thiram seed dressing
Fubol 58WP applied 6 weeks post-drilling
+ 5% metalaxyl granule formulation

Square root transformations in parentheses
NSD No significant difference at the
5% level of probability (P = 0.05)
All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Table 15: Determination of cavity spot index at Harvest II on 12 March
Arthur Rickwood EHF 1990/91.

Treatment	Cavity Spot Index at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	0.80 (0.078)	1.15 (0.346)	0.98 (0.212)
2. Polycote Prime SD	0.65 (0.285)	0.80 (0.007)	0.73 (0.139)
3. Experimental SD 1	0.70 (0.174)	0.25 (-0.511)	0.48 (-0.342)
4. Experimental SD 2	1.13 (0.117)	0.20 (-0.618)	0.66 (-0.250)
5. Fubol 58WP* [overall]	0.60 (-0.253)	1.15 (0.327)	0.88 (0.037)
6. Fubol 58WP* [15 cm band]	0.40 (-0.485)	0.70 (-0.121)	0.55 (-0.303)
7. Fubol 58WP* [7 cm band]	1.30 (0.344)	0.20 (-0.553)	0.77 (-0.105)
8. Exp. SD 1 + Fubol [3 kg [†] /7 cm band]	0.30 (-0.549)	1.70 (0.319)	1.00 (-0.115)
9. Exp. SD 2 + Fubol [3 kg [†] /7 cm band]	0.55 (-0.202)	1.10 (0.348)	0.83 (0.073)
10. A5529C** [25 kg incorporated]	0.15 (-0.660)	1.75 (0.362)	0.95 (-0.149)
11. A5529C** [10 kg inc. in row]	0.75 (-0.028)	0.75 (-0.027)	0.75 (-0.028)
12. A5529C** [5 kg inc. in row]	0.60 (-0.123)	0.45 (-0.370)	0.53 (-0.247)
Mean	0.66 (-0.185)	0.85 (-0.041)	0.76 (-0.113)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.1329) (LSD 5% 0.2658) NSD
(0.3255) (LSD 5% 0.6510) NSD
(0.4603) (LSD 5% 0.9206) NSD[■]

* Rovral/Thiram seed dressing

Log₁₀ transformations in parentheses

[†] Fubol 58WP applied 6 weeks post-drilling

NSD No significant difference at the
5% level of probability (P = 0.05)

[‡] 5% metalaxyl granule formulation

[■] Significant at the 8.8% level of
probability (P = 0.088)
All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Table 16: Mean number of cavity spot lesions/root at Harvest I on 7 November
Arthur Rickwood EHF 1990/91.

Treatment	Mean Number of Lesions/Root at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	0.03	0.05	0.04
2. Polycote Prime SD	0.04	0.01	0.03
3. Experimental SD 1	0.03	0.05	0.04
4. Experimental SD 2	0.03	0.07	0.05
5. Fubol 58WP* [overall]	0.05	0.04	0.05
6. Fubol 58WP* [15 cm band]	0.03	0.04	0.03
7. Fubol 58WP* [7 cm band]	0.06	0.05	0.06
8. Exp. SD 1 + Fubol [3 kg [†] /7 cm band]	0.05	0.04	0.05
9. Exp. SD 2 + Fubol [3 kg [†] /7 cm band]	0.04	0.04	0.04
10. A5529C** [25 kg incorporated]	0.03	0.04	0.04
11. A5529C** [10 kg inc. in row]	0.06	0.05	0.05
12. A5529C** [5 kg inc. in row]	0.03	0.03	0.03
Mean	0.04	0.04	0.04

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

0.00563 (LSD 5% 0.01126) NSD
0.01379 (LSD 5% 0.02758) NSD
0.01950 (LSD 5% 0.03900) NSD

* Rovral/Thiram seed dressing

NSD No significant difference at the
5% level of probability (P = 0.05)

[†] Fubol 58WP applied 6 weeks post-drilling

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

[‡] 5% metalaxyl granule formulation

Table 17: Mean number of cavity spot lesions/root at Harvest II on 12 March
Arthur Rickwood EHF 1990/91.

Treatment	Mean Number of Lesions/Root at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	0.03 (0.1649)	0.06 (0.2287)	0.05 (0.1968)
2. Polycote Prime SD	0.02 (0.1059)	0.04 (0.1819)	0.03 (0.1439)
3. Experimental SD 1	0.03 (0.1344)	0.01 (0.0854)	0.02 (0.1099)
4. Experimental SD 2	0.04 (0.1685)	0.01 (0.0750)	0.03 (0.1218)
5. Fubol 58WP* [overall]	0.02 (0.1216)	0.04 (0.1899)	0.03 (0.1557)
6. Fubol 58WP* [15 cm band]	0.01 (0.0683)	0.03 (0.1399)	0.02 (0.1041)
7. Fubol 58WP* [7 cm band]	0.05 (0.1974)	0.01 (0.1104)	0.03 (0.1539)
8. Exp. SD 1 + Fubol [3 kg*/7 cm band]	0.01 (0.0787)	0.07 (0.2296)	0.04 (0.1541)
9. Exp. SD 2 + Fubol [3 kg*/7 cm band]	0.02 (0.1163)	0.05 (0.2161)	0.04 (0.1662)
10. A5529C** [25 kg incorporated]	0.02 (0.1037)	0.06 (0.2097)	0.04 (0.1567)
11. A5529C** [10 kg inc. in row]	0.03 (0.1472)	0.03 (0.1612)	0.03 (0.1542)
12. A5529C** [5 kg inc. in row]	0.02 (0.1354)	0.03 (0.1266)	0.03 (0.1310)
Mean	0.02 (0.1285)	0.04 (0.1629)	0.03 (0.1457)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.01996) (LSD 5% 0.03992) NSD
(0.04890) (LSD 5% 0.0978) NSD
(0.06915) (LSD 5% 0.1383) NSD

* Rovral/Thiram seed dressing

† Fubol 58WP applied 6 weeks post-drilling

‡ 5% metalaxyl granule formulation

Square root transformations in parentheses

NSD No significant difference at the 5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 18: Percentage roots marketable at Harvest I on 7 November
Arthur Rickwood EHF 1990/91.

Treatment	% Roots Marketable at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	100.00 (90.00)	100.00 (90.00)	100.00 (90.00)
2. Polycote Prime SD	99.25 (86.53)	100.00 (90.00)	99.63 (88.27)
3. Experimental SD 1	100.00 (90.00)	100.00 (90.00)	100.00 (90.00)
4. Experimental SD 2	99.75 (88.57)	100.00 (90.00)	99.88 (89.28)
5. Fubol 58WP* [overall]	99.25 (86.53)	99.50 (87.13)	99.58 (86.83)
6. Fubol 58WP* [15 cm band]	100.00 (90.00)	99.50 (87.13)	99.75 (88.57)
7. Fubol 58WP* [7 cm band]	99.50 (87.97)	99.75 (88.57)	99.63 (88.27)
8. Exp. SD 1 + Fubol [3 kg#/7 cm band]	99.50 (87.13)	99.75 (88.57)	99.63 (87.85)
9. Exp. SD 2 + Fubol [3 kg#/7 cm band]	99.75 (88.57)	100.00 (90.00)	99.88 (89.28)
10. A5529C** [25 kg incorporated]	100.00 (90.00)	100.00 (90.00)	100.00 (90.00)
11. A5529C** [10 kg inc. in row]	100.00 (90.00)	99.50 (87.97)	99.75 (88.98)
12. A5529C** [5 kg inc. in row]	100.00 (90.00)	100.00 (90.00)	100.00 (90.00)
Mean	99.75 (88.77)	99.83 (89.11)	99.79 (88.94)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.489) (LSD 5% 0.978) NSD
(1.198) (LSD 5% 2.396) NSD
(1.694) (LSD 5% 3.388) NSD

- * Rovral/Thiram seed dressing
 - # Fubol 58WP applied 6 weeks post-drilling
 - + 5% metalaxyl granule formulation
- Angular transformations in parentheses
NSD No significant difference at the 5% level of probability (P = 0.05)
All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 19: Percentage roots marketable at Harvest II on 12 March
Arthur Rickwood EHF 1990/91.

Treatment	% Roots Marketable at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	99.75 (88.57)	100.00 (90.00)	99.88 (89.28)
2. Polycote Prime SD	99.50 (87.97)	99.75 (88.57)	99.63 (88.27)
3. Experimental SD 1	99.75 (88.57)	100.00 (90.00)	99.88 (89.28)
4. Experimental SD 2	99.50 (87.13)	100.00 (90.00)	99.75 (88.57)
5. Fubol 58WP* [overall]	99.75 (88.57)	99.00 (85.10)	99.38 (86.83)
6. Fubol 58WP* [15 cm band]	99.75 (88.57)	99.75 (88.57)	99.75 (88.57)
7. Fubol 58WP* [7 cm band]	99.25 (86.53)	100.00 (90.00)	99.63 (88.27)
8. Exp. SD 1 + Fubol [3 kg#/7 cm band]	100.00 (90.00)	99.00 (86.07)	99.50 (88.04)
9. Exp. SD 2 + Fubol [3 kg#/7 cm band]	99.75 (88.57)	99.25 (85.70)	99.50 (87.13)
10. A5529C** [25 kg incorporated]	100.00 (90.00)	99.00 (86.07)	99.50 (88.04)
11. A5529C** [10 kg inc. in row]	99.50 (87.13)	99.25 (86.53)	99.38 (86.83)
12. A5529C** [5 kg inc. in row]	99.50 (87.13)	100.00 (90.00)	99.75 (88.57)
Mean	99.67 (88.23)	99.58 (88.05)	99.63 (88.14)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.599) (LSD 5% 1.198) NSD
(1.467) (LSD 5% 2.934) NSD
(2.074) (LSD 5% 4.148) NSD*

* Rovral/Thiram seed dressing

Angular transformations in parentheses

Fubol 58WP applied 6 weeks post-drilling

NSD No significant difference at the
5% level of probability (P = 0.05)

+ 5% metalaxyl granule formulation

Significant difference at the 7.5% level
of probability (P = 0.075)

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Table 20: Determination of crop yield (t/ha) at Harvest I on 7 November
Arthur Rickwood EHF 1990/91.

Treatment	Total Yield at Harvest I (t/ha)		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	61.88	58.25	60.07
2. Polycote Prime SD	57.29	46.98	52.14
3. Experimental SD 1	61.46	58.23	59.85
4. Experimental SD 2	56.56	51.04	53.80
5. Fubol 58WP* [overall]	60.83	51.35	56.09
6. Fubol 58WP* [15 cm band]	55.52	65.63	60.58
7. Fubol 58WP* [7 cm band]	67.40	44.06	55.73
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	65.83	51.98	58.91
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	46.88	52.81	49.85
10. A5529C** [25 kg incorporated]	55.10	49.79	52.45
11. A5529C** [10 kg inc. in row]	53.13	46.77	49.95
12. A5529C** [5 kg inc. in row]	60.52	54.48	57.50
Mean	58.53	52.61	55.57
SED (69 df) for comparing: cultivar means	2.41 (LSD 5% 4.82)		
treatment means	5.91 (LSD 5% 11.82) NSD		
cultivar x treatment means	8.36 (LSD 5% 16.72) NSD		

* Rovral/Thiram seed dressing

NSD No significant difference at the
5% level of probability (P = 0.05)

Fubol 58WP applied 6 weeks post-drilling

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

+ 5% metalaxyl granule formulation

Table 21: Germination assessments of the two varieties at 100% emergence on 31 July
Stockbridge House 1991/92.

Treatment	Mean Number of Plants Emerged/one metre row		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	84.75	83.75	84.25
2. Polycote Prime SD	95.00	104.00	99.50
3. Experimental SD 1	104.25	94.75	99.50
4. Experimental SD 2	99.50	85.50	92.50
5. Fubol 58WP* [overall]	101.25	111.75	106.50
6. Fubol 58WP* [15 cm band]	80.50	87.00	83.75
7. Fubol 58WP* [7 cm band]	91.50	98.50	95.00
8. Exp. SD 1 + Fubol [3 kg [†] /7 cm band]	101.25	82.00	91.63
9. Exp. SD 2 + Fubol [3 kg [†] /7 cm band]	91.50	78.00	84.75
10. A5529C** [25 kg incorporated]	96.25	96.50	96.38
11. A5529C** [10 kg inc. in row]	102.00	99.25	100.63
12. A5529C** [5 kg inc. in row]	98.50	93.50	96.00
Mean	95.52	92.88	94.20

SED (69 df) for comparing: cultivar means	4.34 (LSD 5% 8.68) NSD
treatment means	10.63 (LSD 5% 21.26) NSD
cultivar x treatment means	15.03 (LSD 5% 30.06) NSD

* Rovral/Thiram seed dressing

† Fubol 58WP applied 6 weeks post-drilling

* 5% metalaxyl granule formulation

NSD No significant difference at the
5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Table 22: Percentage roots infected with cavity spot at Harvest I on 21 November
Stockbridge House 1991/92.

Treatment	% Roots with Cavity Spot at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	76.5 (63.4)	16.5 (23.7)	46.5 (43.5)
2. Polycote Prime SD	58.5 (49.9)	21.5 (27.3)	40.0 (38.6)
3. Experimental SD 1	41.5 (39.2)	31.0 (33.2)	36.3 (36.2)
4. Experimental SD 2	27.0 (28.6)	10.5 (18.2)	18.8 (23.4)
5. Fubol 58WP* [overall]	27.5 (31.3)	21.0 (24.8)	24.3 (28.1)
6. Fubol 58WP* [15 cm band]	34.5 (35.1)	18.5 (24.5)	26.5 (29.8)
7. Fubol 58WP* [7 cm band]	53.5 (46.8)	17.0 (23.4)	35.3 (35.1)
8. Exp. SD 1 + Fubol [3 kg [†] /7 cm band]	34.0 (34.1)	11.0 (18.5)	22.5 (25.4)
9. Exp. SD 2 + Fubol [3 kg [†] /7 cm band]	18.0 (23.3)	21.5 (27.4)	19.8 (25.4)
10. A5529C** [25 kg incorporated]	26.5 (29.9)	6.0 (11.7)	16.3 (20.8)
11. A5529C** [10 kg inc. in row]	20.0 (26.2)	8.5 (16.1)	14.3 (21.1)
12. A5529C** [5 kg inc. in row]	26.5 (30.2)	12.5 (20.7)	19.5 (25.4)
Mean	37.00 (36.5)	16.29 (22.5)	26.65 (29.5)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(2.12) (LSD 5% 4.24)
(5.19) (LSD 5% 10.38)
(7.34) (LSD 5% 14.68)

* Rovral/Thiram seed dressing

Angular transformations in parentheses

† Fubol 58WP applied 6 weeks post-drilling

NSD No significant difference at the
5% level of probability (P = 0.05)

‡ 5% metalaxyl granule formulation

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Table 23: Percentage roots infected with cavity spot at Harvest II on 710 March
Stockbridge House 1991/92.

Treatment	% Roots with Cavity Spot at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	62.0 (55.46)	18.5 (24.40)	40.3 (39.93)
2. Polycote Prime SD	64.5 (54.06)	27.0 (30.07)	45.8 (42.06)
3. Experimental SD 1	39.0 (38.32)	13.5 (20.11)	26.3 (29.21)
4. Experimental SD 2	31.0 (31.45)	12.0 (19.82)	21.5 (25.63)
5. Fubol 58WP* [overall]	37.0 (37.16)	10.5 (18.54)	23.8 (27.85)
6. Fubol 58WP* [15 cm band]	33.0 (32.69)	13.5 (20.84)	23.3 (26.76)
7. Fubol 58WP* [7 cm band]	44.0 (41.18)	12.5 (21.17)	28.3 (30.67)
8. Exp. SD 1 + Fubol [3 kg*/7 cm band]	22.0 (26.97)	8.5 (16.83)	15.3 (21.90)
9. Exp. SD 2 + Fubol [3 kg*/7 cm band]	18.5 (23.89)	11.5 (18.76)	15.0 (21.33)
10. A5529C** [25 kg incorporated]	24.8 (29.17)	5.5 (13.23)	15.1 (21.20)
11. A5529C** [10 kg inc. in row]	20.0 (24.76)	7.5 (14.92)	13.8 (19.84)
12. A5529C** [5 kg inc. in row]	19.0 (25.24)	5.0 (11.10)	12.0 (18.17)
Mean	34.56 (35.03)	12.13 (19.07)	23.34 (27.05)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(1.986) (LSD 5% 3.972)
(4.865) (LSD 5% 9.730)
(6.881) (LSD 5% 13.762) NSD

* Rovral/Thiram seed dressing

Angular transformations in parentheses

Fubol 58WP applied 6 weeks post-drilling

NSD No significant difference at the
5% level of probability (P = 0.05)

+ 5% metalaxyl granule formulation

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Table 24: Determination of cavity spot index at Harvest I on 21 November
Stockbridge House 1991/92.

Treatment	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	40.7 (6.18)	5.7 (2.34)	23.2 (4.26)
2. Polycote Prime SD	24.0 (4.64)	6.6 (2.48)	15.3 (3.56)
3. Experimental SD 1	16.7 (3.67)	13.0 (3.37)	14.9 (3.52)
4. Experimental SD 2	11.4 (2.81)	2.5 (1.55)	7.0 (2.18)
5. Fubol 58WP* [overall]	8.6 (2.83)	6.9 (2.23)	7.8 (2.53)
6. Fubol 58WP* [15 cm band]	14.7 (3.32)	7.6 (2.36)	11.2 (2.84)
7. Fubol 58WP* [7 cm band]	23.8 (4.45)	6.3 (2.29)	15.1 (3.37)
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	11.8 (3.08)	3.1 (1.71)	7.5 (2.39)
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	6.1 (2.20)	6.4 (2.50)	6.3 (2.35)
10. A5529C* [25 kg incorporated]	11.2 (3.13)	1.3 (0.93)	6.3 (2.03)
11. A5529C* [10 kg inc. in row]	5.6 (2.31)	2.4 (1.51)	4.0 (1.91)
12. A5529C* [5 kg inc. in row]	8.4 (2.77)	4.3 (2.04)	6.4 (2.41)
Mean	15.25 (3.45)	5.51 (2.11)	10.38 (2.78)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.217) (LSD 5% 0.434)
(0.531) (LSD 5% 1.062)
(0.752) (LSD 5% 1.504)

* Rovral/Thiram seed dressing
Fubol 58WP applied 6 weeks post-drilling
+ 5% metalaxyl granule formulation

Square root transformations in parentheses
NSD No significant difference at the
5% level of probability (P = 0.05)
All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Discussion

This trials series has provided further valuable insight into the epidemiology of cavity spot in carrots. Previous studies on fungicide timing have demonstrated that cavity spot is probably initiated early during the seedling stage and if Fubol 58WP is applied too late (ie 10-12 weeks after drilling) poor control occurs. Yet, occasional reports from commercial sources have suggested that cavity spot continues to develop during the overwintering phase. This has led to increased pressure for growers to apply metalaxyl much later than that currently recommended ie pre-strawing, even though previous trials have shown no benefit.

For the first time in this trials series not only were individual carrots scored for their incidence and severity of cavity spot but the actual number of lesions was counted both in the autumn and following overwintering. In three of the four trials where significant disease developed the number of cavity spot lesions did not increase overwinter. At one site there was an indication from the disease index that the disease had increased during this overwintering period. However, the average number of lesions/root in this trial was low (<1/root) and only a marginal increase was noted. On balance therefore, whilst not conclusive, it would appear that any increase on cavity spot observed overwinter is more likely to be due to an increase in size of existing lesions, probably a result of colonisation by opportunist bacteria and fungi, rather than fresh activity by *P. violae*.

In previous studies there has been controversy regarding the potential benefits from the use of cavity spot tolerant cultivars as described in the NIAB provisional listings. Two cultivars from the NIAB resistance scale (Nanco 2; Nandor 6) were selected in this trials series and compared alongside each other in the six trials reported over a three year period. Nandor consistently had fewer cavity spot lesions than the susceptible cultivar Nanco and this study provides positive evidence of the benefits that can be obtained from the use of cavity spot tolerant cultivars. The

reduction in cavity spot accorded by the cultivar Nandor was as good, and in some cases greater, than that achieved with the full rate of Fubol 58WP.

Carrot growers should therefore, select cultivars carefully in situations where the risk of cavity spot is high and only use the more susceptible cultivars where the risk is low. By adopting this approach it should be possible to reduce the reliance on fungicide application significantly.

The use of Fubol 58WP according to the manufacturers label recommendations in this trials series failed to provide the high level of control recorded in previous studies. Metalaxyl resistance in populations of *P. violae* has not been detected (J. G. White, pers comm.) but cannot be ruled out entirely. Enhanced degradation has been recorded in field soils with metalaxyl though whether this accounts for the poor performance recorded here remains open to speculation and clearly is an area for further study.

The application of metalaxyl at high levels as a seed treatment was very successful in some of the trials reported here whilst in others it failed to provide adequate protection. Clearly this method of application has potential to significantly reduce the quantity of fungicide applied per hectare and therefore reduce the risk of resistance or enhanced degradation. However, before such a use could be advocated a clearer understanding of why the variable control occurred is needed. There is, however, excellent potential to link such seed treatment to the soil test for cavity spot risk developed at HRI, Wellesbourne in the future.

Finally, the use of a granule formulation (A5529C) of metalaxyl in this trials series provided control equivalent to that achieved with Fubol 58WP containing metalaxyl and mancozeb. Mancozeb has been shown in other studies (White *et al.*, 1992) to be detrimental to naturally occurring populations of *Pythium oligandrum*, an antagonist to other *Pythium* spp. including *P. violae*, and is clearly not an essential component for cavity spot control. It is hoped that the granule formulation of metalaxyl (A5529C) will gain On-Label Approval for cavity spot in the near future.

Conclusions

- * Cavity spot levels in the cultivar Nanco were consistently higher than in the cultivar Nandor. This trials programme confirms the benefits to be gained from tolerant cultivars and supports the provisional NIAB ratings (Nanco 2, Nandor 6).
- * In years when cavity spot incidence was moderate to high, the incidence and severity of the disease tended not to increase during the overwintering phase. This continues to support the view that infection occurs early and fungicide application at, or shortly after, drilling is likely to provide the most effective control.
- * Fubol 58WP applied according to manufacturers label recommendations provided moderate, but variable, control of cavity spot. It is considered that the performance of this product is deteriorating and further investigations are needed to determine whether metalaxyl resistance is present in *P. violae* populations or whether enhanced degradation is occurring. Alternatively, some other factor, as yet unidentified, may be responsible.
- * The application of metalaxyl to the seed in this trials series, whilst variable, has shown that effective control can be achieved with a high loading of the fungicide without adverse phytotoxic effects. Clearly further studies are required in this area as it provides an excellent opportunity to reduce the dose of fungicide applied.
- * The application of Fubol 58WP as a 15 cm band down the row provided control equivalent to an overall treatment in most of the trials reported here, and therefore provides a further opportunity to reduce the quantity of product applied/ha. Whilst not conclusive, reducing the width of the band treatment to 7 cm tended to reduce the efficacy of the treatment.

* Metalaxyl applied in a granular form as A5529C in this trials series was as effective as the standard commercial treatment with Fubol 58WP. The removal of the mancozeb component, which provides no additional benefit for the control of this disease, should address the microbial balance allowing the natural population of the antagonist *P. oligandrum* to equilibriate. It is hoped that On-Label Approval for this formulation will be forthcoming in the near future.

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The project over the three year duration of the study was conducted jointly by ADAS personnel at Leeds, Cambridge and Arthur Rickwood and HRI, Stockbridge House, and the assistance of all staff involved was appreciated. The project leader undertook continued responsibility for the project following his move from ADAS to HRI though unfortunately this caused a delay in the preparation of the final report.

Seed for the trials was kindly supplied by Elsoms and Clause UK and the assistance of Rae Dobbs and John Ward was appreciated. The seed was subsequently treated by various personnel at Seedcote Systems, Norfolk, but particularly Tom Dennis and Nick Bolton. Ciba-Geigy provided samples of products free of charge and the regular contact with Peter Deaville and Andy Leadbeater was appreciated. The enthusiastic support of everyone involved in the programme is acknowledged.

Storage of Data

The raw data from this trials series will be held for a period of not less than 5 years in the archive at HRI, Stockbridge House. Access to the raw data can be made on request via the designated archivist, Mrs S Turver.

APPENDIX I

CULTURAL DETAILS: STOCKBRIDGE HOUSE 1990/91

Field B4

Soil Type Light textured sand loam

Cultivation

14 April Beds rotovated
16 April One pass with bed Tomlin cultivator and crumbler
17 May Drilled (4 rows/bed) with Oyjard drill

Insecticides

17 May Thimet @ 17 kg/ha (carrot fly)
10 July Ambush C @ 250 ml/1120 l/ha (cutworm)
Metasystox 55 @ 420 ml/1120 l/ha (aphid)
Agral @ 50 ml/1120 l/ha (adjuvant)
19 July Ambush C @ 250 ml/1120 l/ha (cutworm)
Agral @ 50 ml/1120 l/ha (adjuvant)

Herbicides

17 May Linuron Liquid 15 @ 3.5 l/1120 l/ha
26 June Croptex Bronze @ 3 l/1000 l/ha
Dosaflo @ 3 l/1000 l/ha

Fertilisers

16 April 60 kg/ha N + 24 kg/ha P₂O₅ + 100 kg/ha K₂O

CULTURAL DETAILS: STOCKBRIDGE HOUSE 1991/92

Field L

Soil Type Sandy loam

Cultivation

9 May Trial drilled

Insecticides

9 May Disyston @ 11 kg/ha (carrot fly)
8 July Aphox @ 280 g/760 l/ha (aphid)
12 July Ambush @ 250 ml/1120 l/ha (cutworm)
2 September Hostathion @ 1.25 l/1000 l/ha (carrot fly)
11 September Hostathion @ 1.25 l/1000 l/ha (carrot fly)
26 September Hostathion @ 1.25 l/1000 l/ha (carrot fly)
4 October Hostathion @ 1.25 l/1000 l/ha (carrot fly)
21 October Hostathion @ 1.25 l/1000 l/ha (carrot fly)

Herbicides

13 May Linuron 15 @ 3.5 l/500 l/ha

Fertilisers

16 April 75 kg/ha N + 30 kg/ha P₂O₅ + 125 kg/ha K₂O

CULTURAL DETAILS: STOCKBRIDGE HOUSE 1992/93

Field L

Soil Type Light textured sandy loam

Cultivation

25 March Ploughed
21 April Fertiliser incorporated and bedded
11 May Drilled using Ojyard drill

Insecticides

11 May Disyston @ 11 kg/ha (carrot fly)
8 June DSM @ 420 ml/500 l/ha water (aphid)
17 June Ambush C @ 250 ml/600 l/ha water (cutworm)
24 June DSM @ 420 ml/500 l/ha water (aphid)
29 July Birlane 24 @ 10 l/1000 l/ha water (carrot fly)
5 October Birlane 24 @ 10 l/1000 l/ha water (carrot fly)

Herbicides

13 May Gramoxone @ 3 l/ha in 500 l/ha water
Liquid Linuron @ 4.2 l/ha in 500 l/ha water
22 June Dosaflo @ 5.5 l/600 l/ha water

Fertilisers

2 April 21 kg/ha N, 62 kg/ha P₂O₅ + 125 kg/ha K₂O
27 May 20 kg/ha N

Irrigation

30 July 15 mm

CULTURAL DETAILS: ARTHUR RICKWOOD 1990/91

Field L24W
Soil Type Loamy peat with 25% organic matter (pH 6.4)

Cultivation

9 April Beds formed with a Cultirateau
14 May Drilled with 2 rows/bed

Insecticides

5 June Aphox @ 420 g/1000 l/ha (aphid)
24 July Birlane 24 @ 10 l/1000 l/ha (carrot fly)
20 August Sapecron 240 EC @ 10 l/1000 l/ha (carrot fly)
13 September Hostathion @ 2.5 l/1000 l/ha (carrot fly)
24 October Hostathion @ 2.5 l/1000 l/ha (carrot fly)

Herbicides

9 May Gramoxone @ 3 l/300 l/ha
7 June Atlas Solan @ 5.6 l/500 l/ha
16 July Dosaflo @ 5.5 l/500 l/ha

Trace Elements

5 June Manganese sulphate @ 9 kg/250 l/ha
27 June Manganese sulphate @ 9 kg/250 l/ha
11 June Manganese sulphate @ 9 kg/250 l/ha
16 July Manganese sulphate @ 9 kg/250 l/ha

Irrigation

30 May 20 mm
26 June 25 mm
26 July 25 mm

CULTURAL DETAILS: ARTHUR RICKWOOD 1991/92

Field House Ground
Soil Type Loamy peat 90 cm deep with 33% organic matter over
fen clay (Adventurer's Shallow)

Cultivation

20 December Ploughed
23 March Beds formed with a Cultirataeu
14 May Drilled with Ojyard drill

Insecticides

3 May Phorate @ 28 kg/ha (carrot fly)
17 June Aphox @ 280 g/400 l/ha water (aphid)
2 July Aphox @ 280 g/400 l/ha water
18 July Aphox @ 280 g/400 l/ha water
26 July Metasystox R @ 420 ml/400 l/ha water (aphid)
2 August Sapecron 240 EC @ 10 l/1000 l/ha water (carrot fly)
20 August Ambush C @ 250 ml/1000 l/ha water (carrot fly)
12 September Savall @ 3 l/1000 l/ha water (carrot fly)
25 September Sapecron 240 EC @ 10 l/1000 l/ha water (carrot fly)

Fertilisers

4 December 80 kg/ha P₂O₅ + 120 kg/ha K₂O

Trace Elements

14 June Manganese sulphate @ 9 kg/250 l/ha
28 June Manganese sulphate @ 9 kg/250 l/ha
17 July Manganese sulphate @ 9 kg/250 l/ha

Irrigation

23 July 25 mm
12 September 25 mm

CULTURAL DETAILS: ARTHUR RICKWOOD 1992/93

Field House Ground
Soil Type Loamy peat 90 cm deep with 33% organic matter over fen
clay (Adventurer's Shallow)

Cultivation

14 January Ploughed and furrow pressed
17 March Kahn
22 April Cultivateau
14 May Trial drilled
12 August Hand weeded

Insecticides

23 June Ambush C @ 250 ml/ha in 1000 l/ha water (cutworm)
7 August Hostathion @ 1.25 l/ha in 1000 l/ha water (carrot fly)
21 August Hostathion @ 1.25 l/ha in 1000 l/ha water (carrot fly)
5 September Hostathion @ 1.25 l/ha in 1000 l/ha water (carrot fly)
21 September Hostathion @ 1.25 l/ha in 1000 l/ha water (carrot fly)
8 October Hostathion @ 1.25 l/ha in 1000 l/ha water (carrot fly)
4 November Hostathion @ 1.25 l/ha in 1000 l/ha water (carrot fly)

Herbicides

20 May Linuron 50 @ 2.2 kg/ha in 250 l/ha water
8 June Atlas Solan 40 @ 5.6 l/ha in 250 l/ha water
22 June Linuron Flowable @ 2.4 l/ha in 1000 l/ha water
29 June Dosaflo @ 6 l/ha in 300 l/ha water

Fertilisers

14 January 46 kg/ha P₂O₅ + 40 kg/ha K₂O
3 June 60 kg/ha N

Trace Elements

9 June Manganese sulphate @ 8 kg/250 l/ha
7 July Manganese sulphate @ 8 kg/250 l/ha

Irrigation

8 July 25 mm

APPENDIX II:

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Table 32: Percentage roots infected with cavity spot at Harvest I on 25 November
Arthur Rickwood EHF 1991/92.

Treatment	% Root with Cavity Spot at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	30.00 (32.30)	5.50 (12.82)	17.75 (22.56)
2. Polycote Prime SD	21.00 (27.26)	3.75 (10.11)	12.38 (18.68)
3. Experimental SD 1	9.25 (17.48)	3.00 (8.61)	6.13 (13.05)
4. Experimental SD 2	16.50 (23.16)	3.00 (9.70)	9.75 (16.43)
5. Fubol 58WP* [overall]	7.25 (15.40)	1.25 (6.34)	4.25 (10.87)
6. Fubol 58WP* [15 cm band]	10.00 (17.90)	0.75 (3.47)	5.38 (10.68)
7. Fubol 58WP* [7 cm band]	7.00 (14.98)	1.50 (5.96)	4.25 (10.47)
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	7.00 (15.09)	2.00 (7.99)	4.50 (11.54)
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	5.00 (9.82)	2.75 (8.15)	3.88 (8.98)
10. A5529C** [25 kg incorporated]	13.50 (21.16)	1.75 (6.35)	7.63 (13.76)
11. A5529C** [10 kg inc. in row]	5.00 (12.25)	1.50 (6.80)	3.25 (9.53)
12. A5529C** [5 kg inc. in row]	8.50 (16.43)	2.75 (9.04)	5.63 (12.74)
Mean	11.67 (18.60)	2.46 (7.94)	7.06 (13.27)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(1.032) (LSD 5% 2.064)
(2.529) (LSD 5% 5.058)
(3.577) (LSD 5% 7.154)

* Rovral/Thiram seed dressing

Fubol 58WP applied 6 weeks post-drilling

+ 5% metalaxyl granule formulation

Angular transformations in parentheses

NSD No significant difference at the
5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Table 33: Percentage roots infected with cavity spot at Harvest II 18 March
Arthur Rickwood EHF 1991/92.

Treatment	% Roots with Cavity Spot at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	44.25 (41.44)	13.50 (22.00)	28.88 (31.72)
2. Polycote Prime SD	31.00 (33.77)	4.33 (11.96)	17.65 (22.86)
3. Experimental SD 1	16.33 (22.65)	5.00 (13.24)	10.65 (17.94)
4. Experimental SD 2	20.25 (25.91)	9.50 (17.42)	14.88 (21.66)
5. Fubol 58WP* [overall]	5.75 (13.19)	9.25 (17.62)	7.50 (15.41)
6. Fubol 58WP* [15 cm band]	20.25 (25.98)	2.25 (8.38)	11.25 (17.18)
7. Fubol 58WP* [7 cm band]	14.00 (21.13)	4.50 (11.91)	9.25 (16.52)
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	13.25 (21.01)	5.50 (12.99)	9.38 (17.00)
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	8.00 (14.80)	5.75 (12.20)	6.88 (13.50)
10. A5529C** [25 kg incorporated]	17.50 (24.57)	2.50 (8.59)	10.00 (16.58)
11. A5529C** [10 kg inc. in row]	19.50 (22.67)	4.00 (11.49)	11.75 (17.08)
12. A5529C** [5 kg inc. in row]	12.75 (20.83)	2.50 (8.85)	7.63 (14.84)
Mean	18.57 (23.99)	5.72 (13.05)	12.14 (18.52)

SED (64 df[#]) for comparing:
cultivar means (1.491) (LSD 5% 2.982)
treatment means (3.652) (LSD 5% 7.304)
cultivar x treatment means (5.164) (LSD 5% 10.328)

- * Rovral/Thiram seed dressing Angular transformations in parentheses
- # Fubol 58WP applied 6 weeks post-drilling NSD No significant difference at the 5% level of probability (P = 0.05)
- + 5% metalaxyl granule formulation All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise
- Five missing values

Table 34: Determination of cavity spot index at Harvest I on 25 November
Arthur Rickwood EHF 1991/92.

Treatment	Cavity Spot Index at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	12.10 (3.31)	1.75 (1.20)	6.93 (2.26)
2. Polycote Prime SD	8.55 (2.91)	1.05 (0.95)	4.80 (1.93)
3. Experimental SD 1	3.50 (1.83)	0.85 (0.80)	2.18 (1.31)
4. Experimental SD 2	5.55 (2.22)	0.95 (0.95)	3.25 (1.58)
5. Fubol 58WP* [overall]	2.20 (1.46)	0.45 (0.65)	1.33 (1.06)
6. Fubol 58WP* [15 cm band]	3.10 (1.70)	0.20 (0.31)	1.65 (1.00)
7. Fubol 58WP* [7 cm band]	2.00 (1.40)	0.60 (0.64)	1.30 (1.02)
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	2.20 (1.45)	0.70 (0.81)	1.45 (1.13)
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	1.80 (0.96)	0.85 (0.77)	1.33 (0.86)
10. A5529C** [25 kg incorporated]	4.65 (2.08)	0.55 (0.61)	2.60 (1.35)
11. A5529C** [10 kg inc. in row]	1.30 (1.09)	0.45 (0.63)	0.88 (0.86)
12. A5529C** [5 kg inc. in row]	2.80 (1.61)	0.70 (0.80)	1.75 (1.21)
Mean	4.15 (1.83)	0.76 (0.76)	2.45 (1.30)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.111) (LSD 5% 0.221)
(0.271) (LSD 5% 0.542)
(0.383) (LSD 5% 0.766)

* Rovral/Thiram seed dressing
Fubol 58WP applied 6 weeks post-drilling
+ 5% metalaxyl granule formulation

Square root transformations in parentheses
NSD No significant difference at the
5% level of probability (P = 0.05)
All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Table 35: Determination of cavity spot index at Harvest II on 18 March
Arthur Rickwood EHF 1991/92.

Treatment	Cavity Spot Index at Harvest I			Mean
	Nanco	Nandor	Mean	
1. Rovral/Thiram SD*	20.68 (2.99)	6.29 (1.89)	13.48 (2.44)	
2. Polycote Prime SD	12.80 (2.55)	1.52 (0.40)	7.16 (1.48)	
3. Experimental SD 1	7.05 (1.54)	2.45 (0.94)	4.75 (1.24)	
4. Experimental SD 2	8.15 (1.98)	3.45 (1.23)	5.80 (1.60)	
5. Fubol 58WP* [overall]	2.20 (0.73)	3.75 (1.38)	2.97 (1.05)	
6. Fubol 58WP* [15 cm band]	7.35 (1.82)	0.65 (-0.04)	4.00 (0.89)	
7. Fubol 58WP* [7 cm band]	5.50 (1.57)	1.60 (0.59)	3.55 (1.08)	
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	5.20 (1.67)	1.50 (0.48)	3.35 (1.07)	
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	2.95 (0.83)	1.95 (0.38)	2.45 (0.60)	
10. A5529C** [25 kg incorporated]	6.50 (1.88)	0.75 (0.05)	3.62 (0.96)	
11. A5529C** [10 kg inc. in row]	8.85 (1.37)	1.50 (0.57)	5.18 (0.97)	
12. A5529C** [5 kg inc. in row]	4.95 (1.64)	0.65 (-0.01)	2.80 (0.82)	
Mean	7.68 (1.71)	2.17 (0.653)	4.93 (1.18)	

SED (64 df[#]) for comparing:
cultivar means (0.144) (LSD 5% 0.288)
treatment means (0.353) (LSD 5% 0.706)
cultivar x treatment means (0.499) (LSD 5% 0.998)

* Rovral/Thiram seed dressing

Fubol 58WP applied 6 weeks post-drilling

+ 5% metalaxyl granule formulation

■ Five missing values

Log. transformations in parentheses

NSD No significant difference at the 5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 36: Mean number of cavity spot lesions/root at Harvest I on 25 November
Arthur Rickwood 1991/92.

Treatment	Mean Number of Lesions/Root at Harvest 1		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	0.54 (-0.15)	0.08 (-0.80)	0.31 (-0.47)
2. Polycote Prime SD	0.42 (-0.23)	0.05 (-0.87)	0.23 (-0.55)
3. Experimental SD 1	0.13 (-0.70)	0.03 (-0.90)	0.08 (-0.79)
4. Experimental SD 2	0.23 (-0.54)	0.04 (-0.89)	0.13 (-0.72)
5. Fubol 58WP* [overall]	0.09 (-0.77)	0.02 (-0.94)	0.05 (-0.86)
6. Fubol 58WP* [15 cm band]	0.13 (-0.69)	0.01 (-0.96)	0.07 (-0.83)
7. Fubol 58WP* [7 cm band]	0.09 (-0.78)	0.02 (-0.94)	0.05 (-0.86)
8. Exp. SD 1 + Fubol [3 kg*/7 cm band]	0.09 (-0.76)	0.02 (-0.93)	0.06 (-0.85)
9. Exp. SD 2 + Fubol [3 kg*/7 cm band]	0.08 (-0.82)	0.03 (-0.90)	0.05 (-0.86)
10. A5529C** [25 kg incorporated]	0.18 (-0.60)	0.02 (-0.94)	0.10 (-0.77)
11. A5529C** [10 kg inc. in row]	0.06 (-0.83)	0.02 (-0.94)	0.04 (-0.89)
12. A5529C** [5 kg inc. in row]	0.11 (-0.74)	0.03 (-0.91)	0.07 (-0.82)
Mean	0.18 (-0.63)	0.03 (-0.91)	0.10 (-0.77)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.0283) (LSD 5% 0.057)
(0.0693) (LSD 5% 0.139)
(0.0979) (LSD 5% 0.196)

* Rovral/Thiram seed dressing

Fubol 58WP applied 6 weeks post-drilling

+ 5% metalaxyl granule formulation

Log_e transformations in parentheses

NSD No significant difference at the
5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Table 37: Mean number of cavity spot lesions/root at Harvest II on 18 March
Arthur Rickwood 1991/92.

Treatment	Mean Number of Lesions/Root at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	0.86 (0.15)	0.31 (-0.42)	0.58 (-0.13)
2. Polycote Prime SD	0.62 (-0.03)	0.06 (-0.83)	0.34 (-0.43)
3. Experimental SD 1	0.33 (-0.43)	0.06 (-0.82)	0.20 (-0.63)
4. Experimental SD 2	0.33 (-0.40)	0.17 (-0.62)	0.25 (-0.51)
5. Fubol 58WP* [overall]	0.09 (-0.78)	0.14 (-0.68)	0.11 (-0.73)
6. Fubol 58WP* [15 cm band]	0.32 (-0.41)	0.03 (-0.90)	0.18 (-0.66)
7. Fubol 58WP* [7 cm band]	0.24 (-0.52)	0.05 (-0.85)	0.14 (-0.69)
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	0.22 (-0.54)	0.07 (-0.81)	0.14 (-0.68)
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	0.11 (-0.74)	0.08 (-0.80)	0.10 (-0.77)
10. A5529C** [25 kg incorporated]	0.26 (-0.47)	0.04 (-0.89)	0.15 (-0.68)
11. A5529C** [10 kg inc. in row]	0.39 (-0.46)	0.08 (-0.91)	0.23 (-0.63)
12. A5529C** [5 kg inc. in row]	0.20 (-0.56)	0.03 (-0.91)	0.11 (-0.73)
Mean	0.33 (-0.43)	0.09 (-0.78)	0.21 (-0.61)

SED (64 df[#]) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.053) (LSD 5% 0.105)
(0.129) (LSD 5% 0.257)
(0.182) (LSD 5% 0.364) NSD^o

- * Rovral/Thiram seed dressing
- # Fubol 58WP applied 6 weeks post-drilling
- + 5% metalaxyl granule formulation
- Five missing values
- ° Significant difference at the 11% level of probability (P = 0.11)

Log_e transformations in parentheses

NSD No significant difference at the 5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 38: Percentage root marketable at Harvest I on 25 November
Arthur Rickwood EHF 1991/92.

Treatment	% Roots Marketable at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	92.25 (74.61)	99.00 (86.07)	95.13 (80.34)
2. Polycote Prime SD	94.50 (77.36)	100.00 (90.00)	97.25 (83.68)
3. Experimental SD 1	97.75 (81.75)	99.75 (88.57)	98.88 (85.16)
4. Experimental SD 2	98.00 (83.19)	99.50 (87.13)	98.75 (85.16)
5. Fubol 58WP* [overall]	99.00 (85.10)	100.00 (90.00)	99.50 (87.55)
6. Fubol 58WP* [15 cm band]	99.00 (85.10)	100.00 (90.00)	99.50 (87.55)
7. Fubol 58WP* [7 cm band]	99.75 (88.57)	99.75 (88.57)	99.75 (88.57)
8. Exp. SD 1 + Fubol [3 kg ⁺ /7 cm band]	99.25 (87.51)	99.25 (86.53)	99.25 (87.02)
9. Exp. SD 2 + Fubol [3 kg ⁺ /7 cm band]	99.25 (87.51)	99.50 (87.13)	99.38 (87.32)
10. A5529C** [25 kg incorporated]	97.50 (83.57)	99.75 (88.57)	98.63 (86.07)
11. A5529C** [10 kg inc. in row]	99.75 (88.57)	99.75 (88.57)	99.75 (86.57)
12. A5529C** [5 kg inc. in row]	98.50 (83.90)	100.00 (90.00)	99.25 (86.95)
Mean	97.88 (83.89)	99.69 (88.43)	98.78 (86.16)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.743) (LSD 5% 1.486)
(1.820) (LSD 5% 3.640)
(2.574) (LSD 5% 5.148)

* Rovral/Thiram seed dressing

Fubol 58WP applied 6 weeks post-drilling

+ 5% metalaxyl granule formulation

Angular transformations in parentheses

NSD No significant difference at the
5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Table 39: Percentage roots marketable at Harvest II on 18 March
Arthur Rickwood EHF 1991/92.

Treatment	% Roots Marketable at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	83.00 (65.93)	95.50 (78.22)	89.25 (72.08)
2. Polycote Prime SD	92.00 (73.99)	99.67 (87.79)	95.84 (80.89)
3. Experimental SD 1	95.33 (79.71)	98.67 (84.29)	97.00 (82.00)
4. Experimental SD 2	95.25 (78.13)	98.50 (83.07)	96.88 (80.60)
5. Fubol 58WP* [overall]	98.25 (83.58)	97.50 (81.27)	97.88 (82.42)
6. Fubol 58WP* [15 cm band]	96.50 (82.90)	99.75 (88.57)	98.13 (85.73)
7. Fubol 58WP* [7 cm band]	97.25 (81.93)	99.00 (85.10)	98.13 (83.51)
8. Exp. SD 1 + Fubol [3 kg [†] /7 cm band]	96.25 (79.01)	99.75 (88.57)	98.00 (83.79)
9. Exp. SD 2 + Fubol [3 kg [†] /7 cm band]	97.75 (82.99)	99.00 (87.12)	98.38 (85.05)
10. A5529C** [25 kg incorporated]	95.75 (78.36)	99.75 (88.57)	97.75 (83.46)
11. A5529C** [10 kg inc. in row]	93.75 (79.54)	99.00 (85.93)	96.38 (82.74)
12. A5529C** [5 kg inc. in row]	97.00 (80.30)	100.00 (90.00)	98.50 (85.15)
Mean	94.84 (78.86)	98.84 (85.71)	96.84 (82.29)

SED (64 df■) for comparing:	
cultivar means	(1.079) (LSD 5% 2.158)
treatment means	(2.643) (LSD 5% 5.286)
cultivar x treatment means	(3.737) (LSD 5% 7.474) NSD

* Rovral/Thiram seed dressing	Angular transformations in parentheses
† Fubol 58WP applied 6 weeks post-drilling	NSD No significant difference at the 5% level of probability (P = 0.05)
‡ 5% metalaxyl granule formulation	All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise
■ Five missing values	

Table 40: Determination of crop yield (t/ha) at Harvest I on 25 November
Arthur Rickwood EHF 1991/92.

Treatment	Total Yield at Harvest I (t/ha)		Mean
	Nanco	Nandor	
1. Rovral/Thiram SD*	106.03	105.80	105.9
2. Polycote Prime SD	112.57	111.76	112.2
3. Experimental SD 1	95.61	98.66	97.1
4. Experimental SD 2	123.21	102.83	113.0
5. Fubol 58WP* [overall]	97.92	80.21	89.1
6. Fubol 58WP* [15 cm band]	123.96	102.01	113.0
7. Fubol 58WP* [7 cm band]	113.32	91.37	102.3
8. Exp. SD 1 + Fubol [3 kg [†] /7 cm band]	118.23	103.87	111.0
9. Exp. SD 2 + Fubol [3 kg [†] /7 cm band]	119.12	108.48	113.8
10. A5529C** [25 kg incorporated]	115.77	88.99	102.4
11. A5529C** [10 kg inc. in row]	111.98	94.57	103.3
12. A5529C** [5 kg inc. in row]	116.07	91.67	103.9
Mean	112.8	98.4	105.9

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

3.22 (LSD 5% 6.44)
7.88 (LSD 5% 15.76) NSD°
11.15 (LSD 5% 22.30)

* Rovral/Thiram seed dressing

NSD No significant difference at the
5% level of probability (P = 0.05)

† Fubol 58WP applied 6 weeks post-drilling

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

‡ 5% metalaxyl granule formulation

° Significant difference at the 6.6%
level of probability (P = 0.066)

Table 41: Germination assessment of the two varieties at 100% emergence on 9 June
Stockbridge House 1992/93.

Treatment	Mean number of plants emerged/one metre row		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	70.00	67.75	68.88
2. Polycote Prime SD	73.50	53.00	63.25
3. Experimental SD 1	53.50	59.75	56.63
4. Experimental SD 2	54.00	56.25	55.13
5. Fubol 58WP* [overall]	66.50	58.75	62.63
6. Fubol 58WP* [15 cm band]	70.25	55.00	62.63
7. Fubol 58WP* [7 cm band]	68.75	64.75	66.75
8. Exp. SD 1 + Fubol [3 kg*/7 cm band]	60.80	62.50	61.65
9. Exp. SD 2 + Fubol [3 kg*/7 cm band]	55.50	44.00	49.75
10. A5529C** [25 kg incorporated]	64.00	59.00	61.50
11. A5529C** [10 kg inc. in row]	60.75	58.50	59.63
12. A5529C** [5 kg inc. in row]	62.25	67.00	64.63
13. A5529C** [25 kg/15 cm band inc.]	59.00	58.25	58.63
Mean	63.00	58.80	60.90
SED (75 df) for comparing: cultivar means treatment means cultivar x treatment means	2.25 (LSD 5% 5.78 (LSD 5% 8.13 (LSD 5%	4.50) NSD 11.50) NSD 16.26) NSD	

* Rovral/Thiram seed dressing

NSD No significant difference at the
5% level of probability (P = 0.05)

Fubol 58WP applied 6 weeks post-drilling

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

+ 5% metalaxyl granule formulation

Table 42: Percentage roots infected with cavity spot at Harvest I on 11 November
Stockbridge House 1992/93.

Treatment	% Roots with Cavity Spot at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	91.50 (73.4)	48.50 (44.2)	70.00 (58.8)
2. Polycote Prime SD	90.00 (74.5)	35.00 (36.2)	62.50 (55.3)
3. Experimental SD 1	82.50 (65.8)	31.00 (32.7)	56.75 (49.3)
4. Experimental SD 2	84.00 (66.5)	29.50 (32.2)	56.75 (49.4)
5. Fubol 58WP* [overall]	55.50 (49.2)	26.00 (30.5)	40.75 (39.8)
6. Fubol 58WP* [15 cm band]	65.50 (54.4)	17.00 (23.8)	41.25 (39.1)
7. Fubol 58WP* [7 cm band]	76.50 (63.6)	52.50 (46.3)	64.50 (55.0)
8. Exp. SD 1 + Fubol [3 kg [†] /7 cm band]	88.00 (71.5)	34.50 (35.0)	61.25 (53.2)
9. Exp. SD 2 + Fubol [3 kg [†] /7 cm band]	83.50 (67.9)	44.50 (41.6)	64.00 (54.8)
10. A5529C** [25 kg incorporated]	59.00 (52.5)	37.00 (36.3)	48.00 (44.4)
11. A5529C** [10 kg inc. in row]	58.50 (51.0)	24.50 (28.6)	41.50 (39.8)
12. A5529C** [5 kg inc. in row]	78.00 (63.4)	32.50 (34.2)	55.25 (48.8)
13. A5529C** [25 kg/15 cm band inc.]	65.00 (54.0)	33.00 (35.0)	49.00 (44.5)
Mean	75.19 (62.1)	34.27 (35.1)	54.73 (48.6)

SED (75 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(2.47) (LSD 5% 4.94)
(6.30) (LSD 5% 12.60) NSD
(8.91) (LSD 5% 17.82) NSD

* Rovral/Thiram seed dressing

† Fubol 58WP applied 6 weeks post-drilling

** 5% metalaxyl granule formulation

The data was subjected to an angular transformation prior to statistical analysis and is presented in parentheses
NSD No significant difference at the 5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 43: Percentage roots infected with cavity spot at Harvest II on 9 March
Stockbridge House 1992/93.

Treatment	% Roots with Cavity Spot at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	78.18 (62.7)	41.60 (39.7)	59.90 (51.2)
2. Polycote Prime SD	94.50 (76.9)	34.27 (35.3)	64.39 (56.1)
3. Experimental SD 1	91.45 (75.2)	44.07 (41.8)	67.76 (58.5)
4. Experimental SD 2	79.53 (65.2)	36.32 (36.8)	57.93 (51.0)
5. Fubol 58WP* [overall]	60.87 (54.3)	45.17 (41.5)	53.02 (47.9)
6. Fubol 58WP* [15 cm band]	69.12 (60.4)	18.81 (25.6)	43.97 (43.0)
7. Fubol 58WP* [7 cm band]	86.31 (71.7)	48.82 (43.5)	67.57 (57.6)
8. Exp. SD 1 + Fubol [3 kg#/7 cm band]	84.04 (66.7)	40.17 (38.7)	62.11 (52.7)
9. Exp. SD 2 + Fubol [3 kg#/7 cm band]	85.18 (71.1)	39.75 (38.6)	62.47 (54.9)
10. A5529C** [25 kg incorporated]	58.78 (50.7)	39.08 (38.4)	48.92 (44.6)
11. A5529C** [10 kg inc. in row]	64.59 (54.5)	23.39 (25.5)	43.99 (40.0)
12. A5529C** [5 kg inc. in row]	82.25 (66.5)	44.30 (41.7)	63.28 (54.1)
13. A5529C** [25 kg/15 cm band inc.]	73.03 (59.0)	37.51 (37.7)	55.27 (48.8)
Mean	77.53 (64.2)	37.94 (37.3)	57.73 (50.8)

SED (75 df) for comparing:
cultivar means (2.52) (LSD 5% 5.04)
treatment means (6.43) (LSD 5% 12.86) NSD
cultivar x treatment means (9.09) (LSD 5% 18.18) NSD

* Rovral/Thiram seed dressing

Fubol 58WP applied 6 weeks post-drilling

+ 5% metalaxyl granule formulation

The data was subjected to an angular transformation prior to statistical analysis and is presented in parentheses
NSD No significant difference at the 5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 44: Determination of cavity spot index at Harvest I on 11 November
Stockbridge House 1992/93.

Treatment	Cavity Spot Index at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	51.8 (7.19)	15.4 (3.86)	33.6 (5.53)
2. Polycote Prime SD	44.1 (6.59)	10.2 (3.16)	27.1 (4.88)
3. Experimental SD 1	38.5 (6.16)	13.2 (3.23)	25.9 (4.70)
4. Experimental SD 2	38.6 (6.20)	11.1 (3.16)	24.9 (4.68)
5. Fubol 58WP* [overall]	31.9 (4.90)	8.2 (2.81)	20.0 (3.86)
6. Fubol 58WP* [15 cm band]	29.7 (5.32)	4.9 (2.12)	17.3 (3.72)
7. Fubol 58WP* [7 cm band]	39.7 (6.10)	20.0 (4.35)	29.9 (5.23)
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	45.5 (6.70)	13.2 (3.40)	29.4 (5.05)
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	42.3 (6.44)	15.3 (3.81)	28.8 (5.12)
10. A5529C* [25 kg incorporated]	30.7 (5.32)	15.1 (3.49)	22.9 (4.41)
11. A5529C* [10 kg inc. in row]	24.7 (4.69)	6.8 (2.46)	15.8 (3.57)
12. A5529C* [5 kg inc. in row]	42.4 (6.49)	10.8 (3.09)	26.6 (4.79)
13. A5529C* [25 kg/15 cm band inc.]	29.2 (5.38)	11.0 (3.29)	20.1 (4.34)
Mean	37.6 (5.96)	11.9 (3.25)	24.8 (4.60)

SED (75 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.25) (LSD 5% 0.49)
(0.63) (LSD 5% 1.26)* NSD
(0.89) (LSD 5% 1.78) NSD

* Rovral/Thiram seed dressing

Fubol 58WP applied 6 weeks post-drilling

* 5% metalaxyl granule formulation

* Significant at 6.8% level of probability
(P = 0.068)

The data was subjected to a square root transformation prior to statistical analysis and is presented in parentheses
NSD No significant difference at the 5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 45: Determination of cavity spot index at Harvest II on 9 March
Stockbridge House 1992/93.

Treatment	Cavity Spot Index at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	35.6 (5.91)	13.7 (3.52)	24.6 (4.72)
2. Polycote Prime SD	52.8 (7.26)	11.6 (3.27)	32.2 (5.27)
3. Experimental SD 1	49.4 (69.9)	17.1 (3.78)	33.3 (5.38)
4. Experimental SD 2	44.6 (66.0)	12.1 (3.35)	28.3 (4.98)
5. Fubol 58WP* [overall]	26.2 (4.78)	15.8 (3.75)	21.0 (4.27)
6. Fubol 58WP* [15 cm band]	36.5 (5.88)	7.0 (2.62)	21.8 (4.25)
7. Fubol 58WP* [7 cm band]	46.9 (6.66)	17.7 (3.84)	32.3 (5.25)
8. Exp. SD 1 + Fubol [3 kg [†] /7 cm band]	40.5 (6.33)	11.6 (3.28)	26.1 (4.80)
9. Exp. SD 2 + Fubol [3 kg [†] /7 cm band]	46.8 (6.68)	12.1 (3.37)	29.4 (5.03)
10. A5529C* [25 kg incorporated]	26.1 (5.04)	13.7 (3.64)	19.9 (4.34)
11. A5529C* [10 kg inc. in row]	27.1 (5.08)	7.3 (2.34)	17.2 (3.71)
12. A5529C* [5 kg inc. in row]	36.4 (5.93)	16.1 (3.92)	26.3 (4.92)
13. A5529C* [25 kg/15 cm band inc.]	32.9 (5.71)	14.9 (3.86)	23.9 (4.79)
Mean	38.6 (6.07)	13.1 (3.43)	25.9 (4.75)
SED (75 df) for comparing: cultivar means treatment means cultivar x treatment means	(0.22) (0.55) (0.78)	(LSD 5% 0.43) (LSD 5% 1.10) (LSD 5% 1.56)	NSD NSD NSD

* Rovral/Thiram seed dressing

† Fubol 58WP applied 6 weeks post-drilling

‡ 5% metalaxyl granule formulation

The data was subjected to a square root transformation prior to statistical analysis and is presented in parentheses
NSD No significant difference at the 5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 46: Mean number of cavity spot lesions/root at Harvest I on 11 November
Stockbridge House 1992/93.

Treatment	Mean Number of Lesions/Root at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	6.23 (1.80)	1.02 (-0.099)	3.62 (0.852)
2. Polycote Prime SD	4.85 (1.48)	0.61 (-0.550)	2.73 (0.466)
3. Experimental SD 1	3.75 (1.26)	0.80 (-0.742)	2.28 (0.258)
4. Experimental SD 2	3.10 (1.10)	0.68 (-0.650)	1.89 (0.223)
5. Fubol 58WP* [overall]	3.19 (0.19)	0.53 (-0.676)	1.86 (-0.242)
6. Fubol 58WP* [15 cm band]	2.17 (0.61)	0.24 (-1.590)	1.20 (-0.491)
7. Fubol 58WP* [7 cm band]	3.98 (1.23)	1.28 (0.002)	2.63 (0.614)
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	4.48 (1.41)	0.89 (-0.558)	2.69 (0.425)
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	3.62 (1.22)	0.88 (-0.242)	2.25 (0.490)
10. A5529C** [25 kg incorporated]	2.48 (0.48)	0.83 (-0.735)	1.66 (-0.128)
11. A5529C** [10 kg inc. in row]	2.70 (0.38)	0.65 (-1.018)	1.67 (-0.317)
12. A5529C** [5 kg inc. in row]	3.96 (1.33)	0.86 (-0.764)	2.41 (0.280)
13. A5529C** [25 kg/15 cm band inc.]	1.87 (0.60)	0.53 (-0.670)	1.20 (-0.034)
Mean	3.57 (1.01)	0.76 (-0.638)	2.16 (0.184)

SED (75 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.17) (LSD 5% 0.33)
(0.42) (LSD 5% 0.85)[§] NSD
(0.60) (LSD 5% 1.30) NSD

* Rovral/Thiram seed dressing

[#] Fubol 58WP applied 6 weeks post-drilling

+ 5% metalaxyl granule formulation

[§] Significant at 6.7% level of probability
(P = 0.067)

The data was subjected to a Log_e transformation prior to statistical analysis and is presented in parentheses
NSD No significant difference at the 5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 47: Mean number of cavity spot lesions/root at Harvest II on 9 March
Stockbridge House 1992/93.

Treatment	Mean Number of Lesions/Root at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	4.17 (1.38)	1.12 (-0.14)	2.64 (0.62)
2. Polycote Prime SD	7.04 (1.95)	0.81 (-0.43)	3.92 (0.76)
3. Experimental SD 1	6.92 (1.91)	2.25 (-0.07)	4.59 (0.92)
4. Experimental SD 2	6.01 (1.64)	1.05 (-0.15)	3.53 (0.75)
5. Fubol 58WP* [overall]	3.48 (0.50)	1.29 (-0.09)	2.38 (0.21)
6. Fubol 58WP* [15 cm band]	3.73 (1.13)	0.44 (-1.11)	2.04 (0.01)
7. Fubol 58WP* [7 cm band]	6.94 (1.61)	2.03 (-0.05)	4.48 (0.78)
8. Exp. SD 1 + Fubol [3 kg#/7 cm band]	4.31 (1.41)	0.99 (-0.23)	2.65 (0.59)
9. Exp. SD 2 + Fubol [3 kg#/7 cm band]	5.28 (1.55)	1.19 (-0.14)	3.23 (0.71)
10. A5529C** [25 kg incorporated]	2.32 (0.63)	1.24 (-0.03)	1.78 (0.30)
11. A5529C** [10 kg inc. in row]	2.65 (0.81)	0.45 (-0.68)	1.55 (0.07)
12. A5529C** [5 kg inc. in row]	5.48 (1.53)	1.45 (0.14)	3.46 (0.84)
13. A5529C** [25 kg/15 cm band inc.]	3.49 (1.22)	0.97 (-0.09)	2.23 (0.56)
Mean	4.75 (1.33)	1.17 (-0.24)	2.96 (0.55)
SED (75 df) for comparing: cultivar means treatment means cultivar x treatment means		(0.15) (LSD 5% 0.31) (0.39) (LSD 5% 0.78) NSD (0.53) (LSD 5% 1.11) NSD	

* Rovral/Thiram seed dressing
 † Fubol 58WP applied 6 weeks post-drilling
 ‡ 5% metalaxyl granule formulation

The data was subjected to a Log_e transformation prior to statistical analysis and is presented in parentheses
 NSD No significant difference at the 5% level of probability (P = 0.05)
 All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 48: Percentage roots marketable at Harvest I on 11 November
Stockbridge House 1992/93.

Treatment	% Roots Marketable at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	45.50 (42.4)	94.50 (79.2)	70.00 (60.8)
2. Polycote Prime SD	62.50 (52.7)	98.00 (83.1)	80.25 (67.9)
3. Experimental SD 1	68.00 (55.9)	89.00 (76.9)	78.50 (66.4)
4. Experimental SD 2	67.00 (55.2)	92.50 (76.6)	79.75 (65.9)
5. Fubol 58WP* [overall]	65.50 (60.1)	97.00 (83.0)	81.25 (71.6)
6. Fubol 58WP* [15 cm band]	75.00 (61.4)	98.50 (85.1)	86.75 (73.3)
7. Fubol 58WP* [7 cm band]	61.00 (52.1)	89.00 (71.7)	75.00 (61.9)
8. Exp. SD 1 + Fubol [3 kg [†] /7 cm band]	56.00 (48.7)	92.50 (76.6)	74.25 (62.6)
9. Exp. SD 2 + Fubol [3 kg [†] /7 cm band]	62.50 (52.7)	92.50 (75.6)	77.50 (64.1)
10. A5529C** [25 kg incorporated]	72.00 (59.9)	89.50 (76.8)	80.75 (68.4)
11. A5529C** [10 kg inc. in row]	82.50 (67.8)	99.00 (87.1)	90.75 (77.4)
12. A5529C** [5 kg inc. in row]	55.50 (48.2)	95.00 (79.6)	75.25 (63.9)
13. A5529C** [25 kg/15 cm band inc.]	80.75 (64.3)	94.00 (76.4)	86.25 (70.4)
Mean	65.67 (55.5)	93.92 (79.0)	79.80 (67.3)

SED (75 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(2.23) (LSD 5% 4.46)
(5.70) (LSD 5% 11.40) NSD
(8.05) (LSD 5% 16.10) NSD

* Rovral/Thiram seed dressing

† Fubol 58WP applied 6 weeks post-drilling

** 5% metalaxyl granule formulation

The data was subjected to an angular transformation prior to statistical analysis and is presented in parentheses
NSD No significant difference at the 5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 25: Determination of cavity spot index at Harvest II on 10 March
Stockbridge House 1991/92.

Treatment	Cavity Spot Index at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	32.2 (5.30)	6.5 (2.35)	19.4 (3.83)
2. Polycote Prime SD	31.0 (5.39)	9.6 (2.93)	20.3 (4.16)
3. Experimental SD 1	17.6 (3.98)	5.1 (2.10)	11.4 (3.04)
4. Experimental SD 2	14.9 (3.30)	4.7 (2.14)	9.8 (2.72)
5. Fubol 58WP* [overall]	15.1 (3.72)	3.2 (1.74)	9.2 (2.73)
6. Fubol 58WP* [15 cm band]	17.7 (3.51)	6.9 (2.45)	12.3 (2.98)
7. Fubol 58WP* [7 cm band]	20.5 (4.16)	5.2 (2.11)	12.9 (3.14)
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	7.0 (2.54)	2.9 (1.66)	5.0 (2.10)
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	7.6 (2.40)	4.9 (2.18)	6.3 (2.29)
10. A5529C* [25 kg incorporated]	12.0 (3.29)	2.1 (1.35)	7.1 (2.32)
11. A5529C* [10 kg inc. in row]	7.0 (2.40)	2.3 (1.44)	4.6 (1.92)
12. A5529C* [5 kg inc. in row]	9.4 (2.92)	2.3 (1.25)	5.9 (2.08)
Mean	16.0 (3.58)	4.64 (1.98)	10.32 (2.78)
SED (69 df) for comparing: cultivar means treatment means cultivar x treatment means		(0.203) (LSD 5% 0.406) (0.498) (LSD 5% 0.996) (0.704) (LSD 5% 1.408) NSD	

* Rovral/Thiram seed dressing
 # Fubol 58WP applied 6 weeks post-drilling
 + 5% metalaxyl granule formulation

Square root transformations in parentheses
 NSD No significant difference at the
 5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha
 post-drilling unless specified otherwise

Table 26: Mean number of cavity spot lesions/root at Harvest I on 21 November
Stockbridge House 1991/92.

Treatment	Mean Number of Lesions/Root at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	5.47 (1.64)	0.28 (-0.43)	2.88 (0.60)
2. Polycote Prime SD	1.95 (0.74)	0.40 (-0.29)	1.18 (0.23)
3. Experimental SD 1	1.09 (0.17)	0.92 (0.03)	1.00 (0.10)
4. Experimental SD 2	0.96 (-0.15)	0.14 (-0.68)	0.55 (-0.42)
5. Fubol 58WP* [overall]	0.57 (-0.13)	0.53 (-0.27)	0.55 (-0.20)
6. Fubol 58WP* [15 cm band]	1.25 (-0.04)	0.43 (-0.38)	0.84 (-0.21)
7. Fubol 58WP* [7 cm band]	2.09 (0.60)	0.54 (-0.27)	1.31 (-0.17)
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	0.89 (0.04)	0.14 (-0.68)	0.51 (-0.32)
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	0.26 (-0.52)	0.30 (-0.40)	0.28 (-0.41)
10. A5529C** [25 kg incorporated]	0.78 (-0.01)	0.08 (-0.81)	0.43 (-0.41)
11. A5529C** [10 kg inc. in row]	0.29 (-0.43)	0.11 (-0.74)	0.20 (-0.58)
12. A5529C** [5 kg inc. in row]	0.54 (-0.21)	0.16 (-0.63)	0.35 (-0.42)
Mean	1.34 (0.14)	0.33 (-0.46)	0.84 (-0.16)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.097) (LSD 5% 0.194)
(0.237) (LSD 5% 0.475)
(0.336) (LSD 5% 0.672)

* Rovral/Thiram seed dressing

Log_e transformations in parentheses

Fubol 58WP applied 6 weeks post-drilling

NSD No significant difference at the
5% level of probability (P = 0.05)

+ 5% metalaxyl granule formulation

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Table 27: Mean number of cavity spot lesions/root at Harvest II on 10 March
Stockbridge House 1991/92.

Treatment	Mean Number of Lesions/Root at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	3.70 (1.75)	0.48 (0.61)	2.09 (1.18)
2. Polycote Prime SD	2.78 (1.62)	0.61 (0.70)	1.69 (1.16)
3. Experimental SD 1	1.31 (1.04)	0.30 (0.50)	0.82 (0.77)
4. Experimental SD 2	1.40 (0.89)	0.30 (0.53)	0.85 (0.71)
5. Fubol 58WP* [overall]	1.25 (1.04)	0.22 (0.45)	0.74 (0.74)
6. Fubol 58WP* [15 cm band]	1.38 (0.90)	0.35 (0.54)	0.86 (0.20)
7. Fubol 58WP* [7 cm band]	1.96 (1.27)	0.33 (0.53)	1.14 (0.90)
8. Exp. SD 1 + Fubol [3 kg#/7 cm band]	0.44 (0.61)	0.17 (0.40)	0.30 (0.51)
9. Exp. SD 2 + Fubol [3 kg#/7 cm band]	0.65 (0.65)	0.29 (0.52)	0.47 (0.58)
10. A5529C** [25 kg incorporated]	1.18 (0.96)	0.07 (0.25)	0.62 (0.60)
11. A5529C** [10 kg inc. in row]	0.34 (0.51)	0.15 (0.35)	0.24 (0.43)
12. A5529C** [5 kg inc. in row]	0.64 (0.75)	0.15 (0.31)	0.40 (0.53)
Mean	1.42 (1.00)	0.29 (0.47)	0.85 (0.74)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.075) (LSD 5% 0.150)
(0.183) (LSD 5% 0.367)
(0.259) (LSE 5% 0.519) NSD

* Rovral/Thiram seed dressing
 † Fubol 58WP applied 6 weeks post-drilling
 ‡ 5% metalaxyl granule formulation
 Square root transformations in parentheses
 NSD No significant difference at the
 5% level of probability (P = 0.05)
 All Fubol applications applied at 12 kg/ha
 post-drilling unless specified otherwise

Table 28: Percentage roots marketable at Harvest I on 21 November
Stockbridge House 1991/92.

Treatment	% Roots Marketable at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	60.5 (52.14)	97.0 (83.01)	78.8 (67.58)
2. Polycote Prime SD	82.5 (69.36)	97.0 (83.01)	89.8 (76.18)
3. Experimental SD 1	90.0 (75.56)	89.5 (74.68)	89.8 (75.12)
4. Experimental SD 2	91.5 (77.10)	99.5 (87.97)	95.5 (92.53)
5. Fubol 58WP* [overall]	96.5 (82.35)	96.5 (82.51)	96.5 (82.43)
6. Fubol 58WP* [15 cm band]	87.5 (73.68)	94.0 (82.67)	90.8 (78.17)
7. Fubol 58WP* [7 cm band]	81.0 (68.37)	96.0 (82.47)	88.5 (75.42)
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	94.0 (79.90)	99.5 (87.97)	96.8 (93.93)
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	96.0 (82.47)	98.0 (84.42)	97.0 (83.45)
10. A5529C** [25 kg incorporated]	90.5 (74.50)	100.0 (90.00)	95.3 (82.25)
11. A5529C** [10 kg inc. in row]	98.5 (85.08)	98.5 (83.90)	98.5 (84.49)
12. A5529C** [5 kg inc. in row]	95.5 (79.62)	98.0 (84.42)	96.8 (82.02)
Mean	88.67 (75.01)	96.96 (83.92)	92.81 (79.47)

SED (69 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(1.687) (LSD 5% 3.374)
(4.133) (LSD 5% 8.266)
(5.845) (LSD 5% 11.690)

* Rovral/Thiram seed dressing

Angular transformations in parentheses

Fubol 58WP applied 6 weeks post-drilling

NSD No significant difference at the
5% level of probability (P = 0.05)

+ 5% metalaxyl granule formulation

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Table 29: Percentage roots marketable at Harvest II on 10 March
Stockbridge House 1991/92.

Treatment	% Roots Marketable at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	68.5 (59.77)	96.0 (82.05)	92.25 (70.91)
2. Polycote Prime SD	74.0 (60.39)	95.0 (78.80)	84.50 (69.60)
3. Experimental SD 1	86.0 (70.95)	96.0 (80.47)	91.00 (75.71)
4. Experimental SD 2	87.0 (74.75)	97.0 (80.17)	92.00 (77.46)
5. Fubol 58WP* [overall]	89.5 (73.76)	98.5 (85.08)	94.00 (79.42)
6. Fubol 58WP* [15 cm band]	81.5 (69.67)	94.5 (80.40)	88.00 (75.03)
7. Fubol 58WP* [7 cm band]	81.8 (66.93)	97.0 (84.93)	89.40 (75.93)
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	98.0 (83.05)	98.0 (84.42)	98.00 (83.74)
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	94.5 (83.01)	97.5 (82.39)	96.00 (82.70)
10. A5529C** [25 kg incorporated]	89.8 (74.18)	99.0 (87.12)	94.40 (80.65)
11. A5529C** [10 kg inc. in row]	96.5 (81.33)	99.5 (87.97)	98.00 (84.65)
12. A5529C** [5 kg inc. in row]	92.0 (75.79)	98.0 (84.23)	95.00 (80.01)
Mean	96.59 (72.80)	97.17 (83.17)	91.88 (77.98)
SED (69 df) for comparing: cultivar means treatment means cultivar x treatment means		(1.781) (LSD 5% 3.562) (4.363) (LSD 5% 8.726) (6.170) (LSD 5% 12.340) NSD	

* Rovral/Thiram seed dressing
 # Fubol 58WP applied 6 weeks post-drilling
 † 5% metalaxyl granule formulation
 Angular transformations in parentheses
 NSD No significant difference at the 5% level of probability (P = 0.05)
 All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 30: Determination of crop yield (t/ha) at Harvest I on 21 November
Stockbridge House 1991/92.

Treatment	Total Yield at Harvest I (t/ha)		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	120.7	90.9	105.7
2. Polycote Prime SD	112.4	113.1	112.7
3. Experimental SD 1	129.1	105.8	117.4
4. Experimental SD 2	118.5	109.9	114.2
5. Fubol 58WP* [overall]	111.5	100.0	105.8
6. Fubol 58WP* [15 cm band]	122.1	102.3	112.2
7. Fubol 58WP* [7 cm band]	129.3	93.1	111.2
8. Exp. SD 1 + Fubol [3 kg#/7 cm band]	102.2	102.7	102.4
9. Exp. SD 2 + Fubol [3 kg#/7 cm band]	114.8	103.2	109.0
10. A5529C** [25 kg incorporated]	117.3	102.2	109.7
11. A5529C** [10 kg inc. in row]	114.4	100.2	107.3
12. A5529C** [5 kg inc. in row]	122.4	118.6	120.5
Mean	117.9	103.5	110.7
SED (69 df) for comparing: cultivar means	2.79 (LSD 5% 5.58)		
treatment means	6.84 (LSD 5% 13.68) NSD		
cultivar x treatment means	9.67 (LSD 5% 19.34) NSD		

* Rovral/Thiram seed dressing

Fubol 58WP applied 6 weeks post-drilling

+ 5% metalaxyl granule formulation

NSD No significant difference at the
5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Table 31: Germination assessment of the two varieties at 100% emergence on 19 July
 Arthur Rickwood EHF 1991/92.

Treatment	Mean Number of Plants Emerged/one metre row		Mean
	Nanco	Nandor	
1. Rovral/Thiram SD*	82.1	79.7	80.9
2. Polycote Prime SD	68.6	67.7	68.2
3. Experimental SD 1	86.2	66.4	76.3
4. Experimental SD 2	75.4	65.0	70.2
5. Fubol 58WP* [overall]	68.1	66.1	67.1
6. Fubol 58WP* [15 cm band]	71.1	67.8	69.4
7. Fubol 58WP* [7 cm band]	74.5	62.6	68.6
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	82.9	72.6	77.8
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	85.9	66.4	76.1
10. A5529C** [25 kg incorporated]	71.1	80.8	75.9
11. A5529C** [10 kg inc. in row]	83.0	66.3	74.6
12. A5529C** [5 kg inc. in row]	77.1	62.6	69.9
Mean	77.2	68.7	72.9

SED (64 df[■]) for comparing:
 cultivar means 2.39 (LSD 5% 4.78)
 treatment means 5.86 (LSD 5% 11.72) NSD
 cultivar x treatment means 8.29 (LSD 5% 16.58) NSD

* Rovral/Thiram seed dressing

Fubol 58WP applied 6 weeks post-drilling

+ 5% metalaxyl granule formulation

■ Five missing values

NSD No significant difference at the
 5% level of probability (P = 0.05)
 All Fubol applications applied at 12 kg/ha
 post-drilling unless specified otherwise

Table 49: Percentage roots marketable at Harvest II on 9 March
Stockbridge House 1992/93.

Treatment	% Roots Marketable at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	76.27 (61.9)	94.51 (80.6)	85.39 (71.3)
2. Polycote Prime SD	47.50 (43.6)	95.03 (79.3)	71.27 (61.4)
3. Experimental SD 1	48.68 (44.0)	91.50 (78.5)	70.09 (61.3)
4. Experimental SD 2	55.36 (48.2)	95.09 (77.7)	75.23 (63.0)
5. Fubol 58WP* [overall]	80.72 (67.5)	91.28 (75.6)	86.00 (71.0)
6. Fubol 58WP* [15 cm band]	67.98 (56.3)	95.04 (76.2)	81.51 (67.7)
7. Fubol 58WP* [7 cm band]	61.40 (52.2)	89.35 (73.6)	75.38 (62.9)
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	64.90 (54.1)	95.68 (79.9)	80.29 (67.0)
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	56.72 (50.0)	96.13 (80.3)	76.43 (65.2)
10. A5529C* [25 kg incorporated]	82.00 (65.3)	94.60 (78.9)	88.30 (72.1)
11. A5529C* [10 kg inc. in row]	81.46 (66.4)	97.22 (81.7)	89.34 (74.1)
12. A5529C* [5 kg inc. in row]	71.33 (59.1)	92.05 (78.4)	81.69 (68.8)
13. A5529C* [25 kg/15 cm band inc.]	75.90 (61.1)	91.02 (73.3)	83.46 (67.2)
Mean	66.94 (56.1)	93.73 (78.2)	80.33 (67.2)
SED (75 df) for comparing: cultivar means		(2.17) (LSD 5% 4.34)	
treatment means		(5.53) (LSD 5% 11.06) NSD	
cultivar x treatment means		(7.82) (LSD 5% 15.64) NSD	

* Rovral/Thiram seed dressing
Fubol 58WP applied 6 weeks post-drilling
+ 5% metalaxyl granule formulation

The data was subjected to an angular transformation prior to statistical analysis and is presented in parentheses
NSD No significant difference at the 5% level of probability (P = 0.05)
All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 50: Determination of crop yield (t/ha) at Harvest I on 11 November
Stockbridge House 1992/93.

Treatment	Total Yield at Harvest I (t/ha)		Mean
	Nanco	Nandor	
1. Rovral/Thiram SD*	108.3	111.0	109.6
2. Polycote Prime SD	114.0	114.8	114.4
3. Experimental SD 1	121.8	111.8	116.8
4. Experimental SD 2	108.0	100.0	104.0
5. Fubol 58WP* [overall]	112.5	111.0	111.8
6. Fubol 58WP* [15 cm band]	125.5	111.8	118.6
7. Fubol 58WP* [7 cm band]	113.8	106.8	110.3
8. Exp. SD 1 + Fubol [3 kg#/7 cm band]	119.0	107.5	113.3
9. Exp. SD 2 + Fubol [3 kg#/7 cm band]	123.3	114.8	119.0
10. A5529C** [25 kg incorporated]	122.8	117.0	119.9
11. A5529C** [10 kg inc. in row]	119.8	109.8	114.8
12. A5529C** [5 kg inc. in row]	116.5	112.0	114.3
13. A5529C** [25 kg/15 cm band inc.]	129.5	120.0	124.8
Mean	118.0	111.4	114.7

SED (75 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

2.17 (LSD 5% 4.34)
5.54 (LSD 5% 11.08)*NSD
7.84 (LSD 5% 15.68) NSD

* Rovral/Thiram seed dressing

The data was subjected to an angular transformation prior to statistical analysis and is presented in parentheses

Fubol 58WP applied 6 weeks post-drilling

NSD No significant difference at the 5% level of probability (P = 0.05)

+ 5% metalaxyl granule formulation

§ Significant at 5.8% level of probability (P = 0.058)

All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 51: Germination assessment of the two varieties at 100% emergence on 24 June
Arthur Rickwood EHF 1992/93.

Treatment	Mean Number of Plants Emerged/one metre row		Mean
	Nanco	Nandor	
1. Rovral/Thiram SD*	64.00	48.75	56.38
2. Polycote Prime SD	51.62	48.00	49.81
3. Experimental SD 1	58.12	50.50	54.31
4. Experimental SD 2	54.00	43.75	48.87
5. Fubol 58WP* [overall]	58.25	53.00	55.62
6. Fubol 58WP* [15 cm band]	61.75	54.37	58.06
7. Fubol 58WP* [7 cm band]	56.12	45.00	50.56
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	60.25	52.12	56.19
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	46.87	45.00	45.94
10. A5529C* [25 kg incorporated]	49.00	38.87	43.94
11. A5529C* [10 kg inc. in row]	56.75	53.12	54.94
12. A5529C* [5 kg inc. in row]	59.37	49.25	54.31
13. A5529C* [25 kg/15 cm band inc.]	52.12	40.62	46.37
Mean	56.02	47.87	51.95

SED (75 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

1.807 (LSD 5% 3.614)
4.606 (LSD 5% 9.212)
6.515 (LSD 5% 13.030) NSD

* Rovral/Thiram seed dressing

NSD No significant difference at the
5% level of probability (P = 0.05)

Fubol 58WP applied 6 weeks post-drilling

All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

+ 5% metalaxyl granule formulation

Table 52: Percentage root infected with cavity spot at Harvest I on 23 November
Arthur Rickwood EHF 1992/93

Treatment	% Roots with Cavity Spot at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	56.5 (49.75)	14.3 (21.71)	35.4 (35.73)
2. Polycote Prime SD	65.8 (54.93)	15.8 (23.36)	40.8 (39.14)
3. Experimental SD 1	49.5 (44.68)	19.5 (26.05)	34.5 (39.14)
4. Experimental SD 2	54.8 (47.72)	21.5 (26.98)	38.2 (37.35)
5. Fubol 58WP* [overall]	38.5 (38.16)	7.8 (15.70)	23.2 (26.93)
6. Fubol 58WP* [15 cm band]	32.5 (34.51)	15.3 (22.43)	23.9 (28.47)
7. Fubol 58WP* [7 cm band]	49.8 (44.27)	8.5 (16.63)	29.2 (30.45)
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	30.0 (33.04)	8.3 (16.38)	19.2 (24.71)
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	32.8 (34.24)	8.3 (16.19)	20.6 (25.21)
10. A5529C** [25 kg incorporated]	39.3 (38.71)	7.8 (15.82)	23.6 (27.27)
11. A5529C** [10 kg inc. in row]	44.8 (41.78)	9.3 (16.94)	27.1 (29.36)
12. A5529C** [5 kg inc. in row]	40.3 (39.32)	11.3 (19.51)	25.8 (29.42)
13. A5529C** [25 kg/15 cm band inc.]	41.8 (40.05)	8.5 (16.81)	25.2 (28.43)
Mean	44.3 (41.63)	12.0 (19.58)	28.2 (30.60)

SED (75 df) for comparing:
cultivar means (1.629) (LSD 5% 3.258)
treatment means (4.152) (LSD 5% 8.304)
cultivar x treatment means (5.872) (LSD 5% 11.744) NSD

* Rovral/Thiram seed dressing
Fubol 58WP applied 6 weeks post-drilling
* 5% metalaxyl granule formulation
Angular transformations in parentheses
NSD No significant difference at the 5% level of probability (P = 0.05)
All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 53: Percentage roots infected with cavity spot at Harvest II on 10 March
Arthur Rickwood EHF 1992/93.

Treatment	% Roots with Cavity Spot at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	50.8 (45.66)	11.0 (18.65)	30.9 (32.16)
2. Polycote Prime SD	60.8 (51.65)	21.5 (26.96)	41.2 (39.31)
3. Experimental SD 1	57.0 (49.01)	13.5 (21.42)	35.3 (35.21)
4. Experimental SD 2	61.8 (52.49)	17.8 (24.30)	39.8 (38.39)
5. Fubol 58WP* [overall]	36.5 (36.91)	8.8 (17.03)	22.7 (26.97)
6. Fubol 58WP* [15 cm band]	32.5 (34.35)	6.8 (14.13)	19.7 (24.24)
7. Fubol 58WP* [7 cm band]	45.3 (41.98)	9.0 (17.23)	27.2 (29.60)
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	30.8 (33.45)	10.5 (18.79)	20.7 (26.12)
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	30.0 (32.52)	15.5 (22.52)	22.8 (27.52)
10. A5529C* [25 kg incorporated]	42.3 (40.26)	9.5 (17.71)	25.9 (28.99)
11. A5529C* [10 kg inc. in row]	44.3 (41.59)	13.5 (20.97)	28.9 (31.28)
12. A5529C* [5 kg inc. in row]	34.8 (35.59)	12.5 (20.55)	23.7 (28.07)
13. A5529C* [25 kg/15 cm band inc.]	28.8 (30.35)	14.8 (22.10)	21.8 (26.22)
Mean	42.7 (40.45)	12.7 (20.18)	27.7 (30.31)

SED (75 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(1.697) (LSD 5% 3.394)
(4.362) (LSD 5% 8.652)
(6.118) (LSD 5% 12.236) NSD

* Rovral/Thiram seed dressing

Angular transformations in parentheses

Fubol 58WP applied 6 weeks post-drilling

NSD No significant difference at the 5% level of probability (P = 0.05)

* 5% metalaxyl granule formulation

All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 54: Determination of cavity spot index at Harvest I on 23 November
Arthur Rickwood EHF 1992/93.

Treatment	Cavity Spot Index at Harvest I			Mean
	Nanco	Nandor	Mean	
1. Rovral/Thiram SD*	23.1 (4.58)	3.6 (1.85)	13.4 (3.21)	
2. Polycote Prime SD	28.3 (5.06)	5.4 (2.31)	16.9 (3.68)	
3. Experimental SD 1	18.2 (4.14)	6.1 (2.44)	12.2 (3.29)	
4. Experimental SD 2	21.3 (4.46)	6.7 (2.46)	14.0 (3.46)	
5. Fubol 58WP* [overall]	13.7 (3.60)	2.1 (1.37)	7.9 (2.49)	
6. Fubol 58WP* [15 cm band]	11.7 (3.33)	4.1 (1.94)	7.9 (2.63)	
7. Fubol 58WP* [7 cm band]	18.5 (4.11)	2.4 (1.48)	10.5 (2.79)	
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	11.6 (3.35)	3.1 (1.66)	7.4 (2.51)	
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	12.1 (3.38)	2.2 (1.42)	7.2 (2.40)	
10. A5529C* [25 kg incorporated]	14.0 (3.69)	2.1 (1.37)	8.1 (2.53)	
11. A5529C* [10 kg inc. in row]	16.9 (3.91)	2.5 (1.49)	9.7 (2.70)	
12. A5529C* [5 kg inc. in row]	15.1 (3.83)	3.4 (1.83)	9.3 (2.83)	
13. A5529C* [25 kg/15 cm band inc.]	16.4 (3.98)	2.3 (1.49)	9.4 (2.73)	
Mean	17.0 (3.96)	3.5 (1.78)	10.3 (2.87)	

SED (75 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.158) (LSD 5% 0.317)
(0.404) (LSD 5% 0.807)
(0.571) (LSD 5% 1.142) NSD

* Rovral/Thiram seed dressing
 # Fubol 58WP applied 6 weeks post-drilling
 + 5% metalaxyl granule formulation

Square root transformations in parentheses
 NSD No significant difference at the
 5% level of probability (P = 0.05)
 All Fubol applications applied at 12 kg/ha
 post-drilling unless specified otherwise

Table 55: Determination of cavity spot index at Harvest II on 10 March
Arthur Rickwood EHF 1992/93.

Treatment	Cavity Spot Index at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	23.4 (4.67)	4.0 (1.87)	13.7 (3.27)
2. Polycote Prime SD	29.6 (5.20)	8.2 (2.74)	18.9 (3.97)
3. Experimental SD 1	25.5 (4.84)	4.8 (2.16)	15.2 (3.50)
4. Experimental SD 2	30.0 (5.29)	5.9 (2.29)	18.0 (3.79)
5. Fubol 58WP* [overall]	15.0 (3.80)	3.2 (1.76)	9.1 (2.78)
6. Fubol 58WP* [15 cm band]	12.4 (3.43)	2.3 (1.36)	7.4 (2.40)
7. Fubol 58WP* [7 cm band]	18.1 (4.08)	2.6 (1.57)	10.4 (2.82)
8. Exp. SD 1 + Fubol [3 kg [#] /7 cm band]	11.9 (3.39)	3.9 (1.95)	7.9 (2.67)
9. Exp. SD 2 + Fubol [3 kg [#] /7 cm band]	14.6 (3.73)	5.7 (2.27)	10.2 (3.00)
10. A5529C* [25 kg incorporated]	19.2 (4.24)	3.2 (1.75)	11.2 (3.00)
11. A5529C* [10 kg inc. in row]	20.0 (4.42)	4.1 (1.95)	12.1 (3.19)
12. A5529C* [5 kg inc. in row]	13.9 (3.56)	3.7 (1.91)	8.8 (2.73)
13. A5529C* [25 kg/15 cm band inc.]	11.9 (3.05)	5.4 (2.27)	8.1 (2.66)
Mean	18.8 (4.13)	4.4 (1.99)	11.6 (3.06)

SED (75 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.174) (LSD 5% 0.348)
(0.444) (LSD 5% 0.887)
(0.628) (LSD 5% 1.235) NSD

- * Rovral/Thiram seed dressing
 - # Fubol 58WP applied 6 weeks post-drilling
 - + 5% metalaxyl granule formulation
- Square root transformations in parentheses
NSD No significant difference at the
5% level of probability (P = 0.05)
All Fubol applications applied at 12 kg/ha
post-drilling unless specified otherwise

Table 56: Mean number of cavity spot lesions/root at Harvest I on 23 November
Arthur Rickwood EHF 1992/93.

Treatment	Mean Number of Lesions/Root at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	1.64 (0.22)	0.19 (-1.80)	0.92 (-0.79)
2. Polycote Prime SD	2.99 (0.67)	0.24 (-1.43)	1.62 (-0.38)
3. Experimental SD 1	1.31 (0.08)	0.34 (-1.17)	0.83 (-0.55)
4. Experimental SD 2	1.57 (0.26)	0.41 (-1.01)	0.99 (-0.40)
5. Fubol 58WP* [overall]	0.81 (-0.32)	0.10 (-2.42)	0.46 (-1.37)
6. Fubol 58WP* [15 cm band]	0.71 (-0.44)	0.25 (-1.60)	0.48 (-1.02)
7. Fubol 58WP* [7 cm band]	1.22 (-0.03)	0.11 (-2.29)	0.67 (-1.16)
8. Exp. SD 1 + Fubol [3 kg [†] /7 cm band]	0.57 (-0.62)	0.15 (-2.15)	0.36 (-1.38)
9. Exp. SD 2 + Fubol [3 kg [†] /7 cm band]	0.85 (-0.42)	0.12 (-2.29)	0.49 (-1.36)
10. A5529C* [25 kg incorporated]	0.82 (-0.22)	0.11 (-2.24)	0.47 (-1.23)
11. A5529C* [10 kg inc. in row]	1.19 (-0.10)	0.13 (-2.33)	0.66 (-1.22)
12. A5529C* [5 kg inc. in row]	0.87 (-0.20)	0.18 (-1.71)	0.53 (-0.95)
13. A5529C* [25 kg/15 cm band inc.]	1.10 (-0.04)	0.12 (-2.21)	0.61 (-1.13)
Mean	1.20 (-0.09)	0.19 (-1.90)	0.70 (-0.99)

SED (75 df) for comparing:
cultivar means
treatment means
cultivar x treatment means

(0.124) (LSD 5% 0.247)
(0.315) (LSD 5% 0.630)
(0.446) (LSD 5% 0.891) NSD

* Rovral/Thiram seed dressing

Log_e transformations in parentheses

† Fubol 58WP applied 6 weeks post-drilling

NSD No significant difference at the 5% level of probability (P = 0.05)

+ 5% metalaxyl granule formulation

All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 57: Mean number of cavity spot lesions/root at Harvest II on 10 March
Arthur Rickwood EHF 1992/93.

Treatment	Mean Number of Lesions/Root at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	1.30 (0.11)	0.20 (-1.89)	0.75 (-0.89)
2. Polycote Prime SD	1.82 (0.29)	0.37 (-1.17)	1.10 (-0.44)
3. Experimental SD 1	1.57 (0.18)	0.21 (-1.59)	0.89 (-0.72)
4. Experimental SD 2	1.82 (0.40)	0.27 (-1.53)	1.05 (-0.57)
5. Fubol 58WP* [overall]	0.80 (-0.33)	0.11 (-2.26)	0.46 (-1.30)
6. Fubol 58WP* [15 cm band]	0.68 (-0.53)	0.10 (-2.72)	0.39 (-1.63)
7. Fubol 58WP* [7 cm band]	0.98 (-0.33)	0.13 (-2.17)	0.56 (-1.25)
8. Exp. SD 1 + Fubol [3 kg#/7 cm band]	0.61 (-0.61)	0.15 (-1.90)	0.38 (-1.25)
9. Exp. SD 2 + Fubol [3 kg#/7 cm band]	0.77 (-0.47)	0.22 (-1.70)	0.50 (-1.08)
10. A5529C** [25 kg incorporated]	1.17 (-0.10)	0.13 (-2.06)	0.65 (-1.08)
11. A5529C** [10 kg inc. in row]	1.20 (0.11)	0.21 (-1.72)	0.71 (-0.80)
12. A5529C** [5 kg inc. in row]	0.73 (-0.49)	0.20 (-1.63)	0.47 (-1.06)
13. A5529C** [25 kg/15 cm band inc.]	0.77 (-1.08)	0.21 (-1.69)	0.49 (-1.39)
Mean	1.09 (-0.22)	0.19 (-1.85)	0.64 (-1.03)
SED (75 df) for comparing: cultivar means treatment means cultivar x treatment means	(0.127) (0.323) (0.456)	(LSD 5% 0.253) (LSD 5% 0.645) (LSD 5% 0.912) NSD	

* Rovral/Thiram seed dressing

Fubol 58WP applied 6 weeks post-drilling

+ 5% metalaxyl granule formulation

Log_e transformations in parentheses

NSD No significant difference at the 5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 58: Percentage roots marketable at Harvest I on 23 November
Arthur Rickwood EHF 1992/93.

Treatment	% Roots Marketable at Harvest I		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	85.5 (69.80)	99.8 (88.57)	92.7 (79.18)
2. Polycote Prime SD	78.8 (66.01)	98.0 (82.98)	88.4 (74.50)
3. Experimental SD 1	88.5 (71.08)	98.0 (83.19)	93.3 (77.14)
4. Experimental SD 2	87.3 (70.44)	97.5 (84.20)	92.4 (77.32)
5. Fubol 58WP* [overall]	94.3 (78.58)	99.5 (87.97)	96.9 (83.27)
6. Fubol 58WP* [15 cm band]	95.3 (79.40)	99.5 (87.97)	97.4 (83.68)
7. Fubol 58WP* [7 cm band]	90.3 (74.20)	99.3 (87.51)	94.8 (80.85)
8. Exp. SD 1 + Fubol [3 kg#/7 cm band]	97.3 (81.85)	98.0 (84.73)	97.7 (83.29)
9. Exp. SD 2 + Fubol [3 kg#/7 cm band]	94.5 (76.94)	99.8 (88.57)	97.2 (82.75)
10. A5529C** [25 kg incorporated]	94.0 (76.57)	100.0 (90.00)	97.0 (83.29)
11. A5529C** [10 kg inc. in row]	92.0 (77.04)	99.3 (86.53)	95.7 (81.79)
12. A5529C** [5 kg inc. in row]	92.8 (75.55)	98.8 (84.50)	95.8 (80.03)
13. A5529C** [25 kg/15 cm band inc.]	90.3 (72.24)	100.0 (90.00)	95.2 (81.12)
Mean	90.8 (74.59)	99.0 (86.67)	94.9 (80.63)
SED (75 df) for comparing: cultivar means treatment means cultivar x treatment means		(1.311) (LSD 5% 2.622) (3.343) (LSD 5% 6.686) NSD (4.728) (LSD 5% 9.436) NSD	

* Rovral/Thiram seed dressing

Fubol 58WP applied 6 weeks post-drilling

+ 5% metalaxyl granule formulation

Angular transformations in parentheses

NSD No significant difference at the 5% level of probability (P = 0.05)

All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise

Table 59: Percentage roots marketable at Harvest II on 10 March
Arthur Rickwood EHF 1992/93.

Treatment	% Roots Marketable at Harvest II		
	Nanco	Nandor	Mean
1. Rovral/Thiram SD*	81.8 (66.45)	99.8 (88.57)	90.8 (77.51)
2. Polycote Prime SD	73.0 (60.17)	95.3 (79.17)	84.2 (69.67)
3. Experimental SD 1	80.5 (65.62)	97.0 (80.80)	88.8 (73.21)
4. Experimental SD 2	76.5 (61.99)	97.3 (82.43)	86.9 (72.21)
5. Fubol 58WP* [overall]	89.5 (71.39)	98.5 (84.04)	94.0 (77.71)
6. Fubol 58WP* [15 cm band]	93.3 (75.33)	98.5 (85.33)	95.9 (80.33)
7. Fubol 58WP* [7 cm band]	88.5 (71.16)	99.0 (85.10)	93.8 (78.13)
8. Exp. SD 1 + Fubol [3 kg [†] /7 cm band]	92.5 (74.53)	98.5 (83.07)	95.5 (78.80)
9. Exp. SD 2 + Fubol [3 kg [†] /7 cm band]	90.3 (72.43)	97.5 (81.86)	93.9 (77.15)
10. A5529C** [25 kg incorporated]	85.0 (68.60)	99.5 (87.13)	92.3 (77.86)
11. A5529C** [10 kg inc. in row]	70.3 (58.50)	98.5 (84.04)	84.4 (71.27)
12. A5529C** [5 kg inc. in row]	93.5 (75.62)	99.0 (85.10)	96.3 (80.36)
13. A5529C** [25 kg/15 cm band inc.]	92.5 (77.45)	97.0 (81.51)	94.8 (79.48)
Mean	85.2 (69.17)	98.1 (83.79)	91.6 (76.44)
SED (75 df) for comparing: cultivar means treatment means cultivar x treatment means		(1.479) (LSD 5% 2.958) (3.772) (LSD 5% 7.544) (5.334) (LSD 5% 10.668) NSD	

* Rovral/Thiram seed dressing
 † Fubol 58WP applied 6 weeks post-drilling
 ‡ 5% metalaxyl granule formulation

Angular transformations in parentheses
 NSD No significant difference at the 5% level of probability (P = 0.05)
 All Fubol applications applied at 12 kg/ha post-drilling unless specified otherwise