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South west sub-clover root rot - 1976 cultivation experiments

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DEPARTMENT OF AGRICULTURE
Western Australia



EXPERIMENTAL SUMMARY 1979

South west sub-clover root rot
- cultivation experiments

South west sub-clover root rot
- effect of lime

Fungicidal control of rapeseed damping-off

White rust (Albugo) on rapeseed

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PLANT RESEARCH DIVISION

1978 EXPERIMENTAL SUMMARY

M.J. Barbetti

SOUTH WEST SUB-CLOVER ROOT ROT 1976 CULTIVATION EXPERIMENTS

Aim: To investigate the effect of cultural practices upon the incidence and severity of sub-clover root rot.

Localities: Karridale (75BU11); Walpole (75DE12) and Narrikup (75AL36)

Treatments:

1. Area fallow August to March; March 1976 cultivation and re-seeded.
2. Spring cultivation and sown to oats; March 1976 cultivation and re-seeded.
3. March 1976 cultivation and re-seeded.
4. Control. No treatment.

Assessments: One assessment was made at each site. For assessment, 10 random samples of five plants were dug up from each plot, washed and rated for disease severity on both tap and lateral roots. The average top and root dry weights per plant were recorded for the plants from each plot.

Results: Previous assessments were made on the above trials in 1976 (reported in the 1976 Experimental Summaries) and in 1977 (reported in the 1977 Experimental Summaries).

The 1976 results showed that the three treatments substantially reduced the levels of both tap and lateral root rot. Of the three treatments applied, the March cultivation and re-seeding was the least effective. The largest reduction in root rot severity due to application of the treatments was linked with levels of lateral root rot. Although treatments as a whole gave marked reductions in the levels of both tap and lateral root rot, high levels of root rot were still present. All treatments resulted in increased top and root weights of plants.

In 1977 two assessments were made at each site. At Walpole there were no treatment effects for either sampling. At Narrikup only treatment 1 showed any promise and at Karridale treatments 1 and 2 produced some good effects, especially in relation to tap root rot. At all sites there were no treatment effects on plant top and root dry weights. Overall, as in previous years, treatment effects were more pronounced earlier in the season (May/June) than later (July onwards).

Treatment effects were much less consistent and much less pronounced in 1977 compared to 1976. Karridale was the only site showing a good level of treatment persistence into the second season following the initial year of treatment application.

A further assessment was made at all three sites in 1978 and these results are shown in the attached table.

Overall, there are few treatment effects persisting into the third year following the initial year of treatment application. There were no effects on levels of lateral root rot and only at Karridale were plants in the treated plots larger than in the controls. At all sites there were less plants with healthy tap roots in the control, compared to the treatments.

Comments:

Assessments over three seasons have shown that, although initially the treatments may have some marked effects on reducing levels of both tap and lateral root rot and resulting in larger plants, these treatment effects fail to persist to any large extent into subsequent years.

TABLE: THE EFFECT OF TREATMENTS ON BOTH THE MEAN LEVELS OF TAP AND LATERAL ROOT ROT AND THE MEAN DRY WEIGHTS OF PLANT TOPS AND ROOTS (RESULTS NOT ANALYSED).

SITE AND DATE OF SAMPLING		TAP ROOT ROT (% Plants)			LATERAL ROOT ROT (% Plants)			PLANT DRY WTS. (gm/plant)		
		Healthy	Mild	Severe	Healthy	Mild	Severe	Tops	Roots	Tops/Roots
KARRIDALE 19/6/78										
Treatment	1	61.4	30.5	7.9	0	0	100	0.0668	0.0275	2.43
"	2	64.9	25.9	9.2	0	0	100	0.0654	0.0281	2.33
"	3	57.7	28.8	13.4	0	0	100	0.0649	0.0280	2.32
"	4	45.8	37.1	17.0	0	0	100	0.0390	0.0198	1.97
WALPOLE 3/7/78										
Treatment	1	39.5	42.4	18.0	0	0	100	0.0462	0.0199	2.32
"	2	39.7	40.2	20.0	0	0	100	0.0522	0.0255	2.05
"	3	43.7	41.5	14.7	0	0	100	0.0502	0.0236	2.13
"	4	22.6	48.4	28.9	0	0	100	0.0507	0.0232	2.18
NARRIKUP 3/7/78										
Treatment	1	78.2	19.9	1.8	0	0	100	0.0523	0.0218	2.40
"	2	72.5	24.3	3.0	0	0	100	0.0480	0.0223	2.15
"	3	68.9	27.8	3.2	0	0	100	0.0459	0.0179	2.56
"	4	58.5	33.9	7.4	0	0	100	0.0482	0.0195	2.47

SOUTH WEST SUB-CLOVER ROOT ROT
1978 LIME TRIAL

Aim: To investigate whether application of lime has any effects on the subsequent levels of root rot.

Locality: Narrikup 78AL5

Treatments:

1. Area untreated.
2. Lime at 2 t/ha applied in Autumn.
3. Lime at 4 t/ha applied in Autumn.

Assessments: Two assessments were made. At each assessment 10 random samples of 5 plants each were dug up from each plot, washed and rated for disease severity on both tap and lateral roots. The average top and root dry weights per plant were recorded for the plants from each plot for both assessments.

Results & Comments: Results are shown in the attached table. Due to substantial variation between replications it is highly unlikely that any significant differences will be obtained between treatments i.e. application of lime has no effect on levels of tap or lateral root rot and no effect on size of plants.

TABLE: THE EFFECT OF LIME APPLICATION ON THE MEAN LEVELS OF TAP AND LATERAL ROOT ROT, AND THE MEAN DRY WEIGHTS OF PLANT TOPS AND ROOTS (RESULTS NOT ANALYSED).

TREATMENTS & DATE SAMPLED	TAP ROOT ROT (% Plants)			LATERAL ROOT ROT (% Plants)			PLANT DRY WEIGHTS (gm/plant)		
	Healthy	Mild	Severe	Healthy	Mild	Severe	Tops	Roots	Tops/Roots
31/5/78									
Untreated	43.7	50.2	6.1	0	0	100	0.0298	0.0120	2.48
Lime 2 t/ha	43.9	52.7	3.4	0	0	100	0.0437	0.0140	3.12
Lime 4 t/ha	36.2	57.3	6.5	0	0	100	0.0272	0.0099	2.75
4/9/78									
Untreated	71.8	24.0	4.2	0	0	100	0.0982	0.0326	3.012
Lime 2 t/ha	70.5	19.4	10.1	0	0	100	0.1020	0.0330	3.091
Lime 4 t/ha	70.0	20.9	5.1	0	0	100	0.0849	0.0299	2.839

FUNGICIDAL CONTROL OF RAPESEED DAMPING-OFF

Aim: To test four fungicides for their ability to control rape seedling pre-emergence damping off.

Locality: Mt Barker Research Station 78MT12

- Treatments:
1. Yellow sarson - 76N137 - Untreated seed
 2. " " - Ridomil treated seed
 3. " " - Captan " "
 4. " " - Difolotan " "
 5. " " - Thiram " "
 6. Tower - Untreated seed
 7. " - Ridomil treated seed
 8. " - Captan " "
 9. " - Difolotan " "
 10. " - Thiram " "
 11. Crossbred - 73N09-287 - Untreated seed
 12. " - Ridomil treated seed
 13. " - Captan " "
 14. " - Difolotan " "
 15. " - Thiram " "

Buffers sown to 73N09-308.

Results & Comments:

Results are shown in the attached table. Due to very uneven sowing, patchy type germination and severe losses from blackleg no conclusions could be drawn from these results.

TABLE: PLANT STANDS AT 2 STAGES FOR THE VARIETY AND SEED TREATMENTS INDICATED (RESULTS NOT ANALYSED).

TREATMENT	GERMINATION COUNTS PER METRE ROW (AV. 5 REPS)		PLANT COUNTS IN 0.2 m ² QUADRATS. (5 REPS, 2 QUADRATS PER PLOT) 4/7/78
	76N137 - Untreat	22.6	17.8
" - Ridomil	14.8	20.1	
" - Captan	15.6	16.0	
" - Difolotan	15.0	18.7	
" - Thiram	12.0	18.8	
Tower - Untreat	12.0	19.3	
" - Ridomil	11.5	13.2	
" - Captan	12.0	13.7	
" - Difolotan	13.2	16.4	
" - Thiram	18.8	18.1	
73N09-287 - Untreat	17.0	16.7	
" - Ridomil	17.0	17.7	
" - Captan	14.0	17.9	
" - Difolotan	15.2	16.4	
" - Thiram	14.2	12.8	
Buffer 73N09-308 - Untreat	12.1	14.8	

WHITE RUST (Albugo) ON RAPESEED 1978

Aim:

To investigate:

1. The importance of Albugo seed contamination.
2. The effectiveness of two fungicides for controlling Albugo seed infection.
3. The effect of sowing date upon the subsequent incidence of Albugo stagheads.

Localities:

Mt Barker Research Station (78MT13); Albany (78AL6);
Bridgetown (78BR3).

Treatments:

1. High seed infection seed sown end May.
2. " " " " " end June.
3. " " " " " end July.
4. Low seed infection seed sown end May.
5. " " " " " end June.
6. " " " " " end July.
7. Commercial seed lime sown end May.
8. " " " " " "(+1% Manzate seed treat)
9. " " " " " "(+0.2% Ridomil seed treat).

N.B. Actual sowing dates were varied to suit date of readiness of site.

Assessments:

Trials were examined at regular intervals and any disease development was recorded.

Results & Comments:

White Rust disease failed to develop sufficiently at both the Albany and Bridgetown sites for any assessments to be made. White Rust did develop well at the Mt Barker Research Station trial site and the results are shown in the attached table.

Variability between replications was extreme and no comment can be made as to any possible treatment effects or trends until results have been analysed.

TABLE: THE EXTENT OF BOTH LEAF & HEAD (STAGHEAD) WHITE RUST INFECTIONS FOR THE TREATMENTS INDICATED (AV. 4 REPS). (RESULTS NOT ANALYSED)

TREAT	SEED INFECTION LEVEL	SEED TREAT	SOWING DATE	PLANT DENSITY COUNTS (NO PLANTS/0.09 m ²)	WHITE RUST LEAF INFECTION (0 - 4 SCALE)	NO WHITE RUST STAGHEADS PER 4 m ² PLOT
1	High	Nil	13/6/78	19.5	3.8	99.0
2	High	Nil	28/6/78	24.3	1.0	6.5
3	High	Nil	16/7/78	24.0	0	16.5
4	Low	Nil	13/6/78	17.8	1.3	6.5
5	Low	Nil	28/6/78	20.8	1.8	14.0
6	Low	Nil	16/7/78	8.8	0	12.0
7	Commercial	Nil	13/6/78	20.0	1.5	10.3
8	Commercial	Manzate	13/6/78	26.3	2.3	51.5
9	Commercial	Ridomil	13/6/78	22.0	1.8	20.5