1989

# Selection and evaluation of medic lines with resistance to aphids and improved agronomic characteristics.

C. M. Saunders

1. SELECTION AND EVALUATION OF MEDIC LINES WITH RESISTANCE TO APHIDS AND IMPROVED AGRONOMIC CHARACTERISTICS.

A) SINGLE ROW EVALUATION

This method of assessment was used to test a range of new medic material received from the Department of Agriculture. This material included M. polymorpha species from the medic cross-breeding programme. The main objectives of this trial was to evaluate the lines for their resistance to blue-green aphid, redlegged earthmite and lucerne flea. However, since the site lacked a substantial infestation of blue-green aphid and lucerne flea, our efforts were concentrated on redlegged earthmite resistance.

TRIAL TITLE: Selection and evaluation of medic lines with resistance to aphids and improved agronomic characteristics - single rows, unreplicated.

TRIAL NUMBER: 89KA11 EX FILE NUMBER: 6201

LOCATION: Great Southern Agricultural Institute - Farm Paddock B15.

SOIL TYPE: Grey loam (pH = 6, in water)

SOWING DATE: 9/6/89

RESULTS:

Table 1:

| Species | Vigour Rating (1 - 5) (18/9/89) | Days to Flower | Days to Senescence | Seed Yield (g/1m row) |
|---|---|---|---|---|
| M. polymorpha | | | | |
| Z653 | 3 | 95 | 164 | 6.77 |
| Z654 | 2 | 102 | 164 | 4.87 |
| Z655 | 2 | 109 | 164 | 1.96 |
| Z656 | 3 | 88 | 157 | 5.95 |
| Z657 | 2 | 88 | 164 | 5.84 |
| Z658 | 3 | 92 | 157 | 10.83 |
| Z659 | 3 | 85 | 157 | 7.66 |
| Z660 | 2 | 92 | 164 | 8.59 |
| Z661 | 2 | 109 | 164 | 15.80 |
| Z662 | 4 | 88 | 157 | 9.18 |
| Z663 | 3 | 95 | 157 | 11.35 |
| Z664 | 3 | 102 | 157 | 6.19 |
| Z665 | 3 | 92 | 157 | 11.71 |
| Z705 | 4 | 88 | 161 | 14.64 |
| Z708 | 3 | 90 | 157 | 6.52 |
| Z709 | 3 | 88 | 157 | 19.43 |
| Z710 | 2 | 90 | 157 | 3.39 |
| Z711 | 3 | 88 | 157 | 4.77 |
| Z712 | 3 | 88 | 157 | 12.95 |
| Z713 | 4 | 88 | 157 | 16.68* |
| Z714 | 4 | 88 | 161 | 14.76 |
| Z715 | 4 | 99 | 157 | 5.31* |
| Z716 | ALL DEAD | | | |
| ***** | | | | |

**** Control rows consisting of Serena, Santiago and Circle Valley were abandoned due to severe contamination with an unidentifiable early M. polymorpha.

* Two types of burr, spiny and smooth, were collected from these lines:

Z713 - spiny = 12.68 g/row
smooth = 3.99 "
Z715 - spiny = 1.01 "
smooth = 4.30 "

FIGURE 3: Example of a medic seed line 'susceptible' to redlegged earthmite.

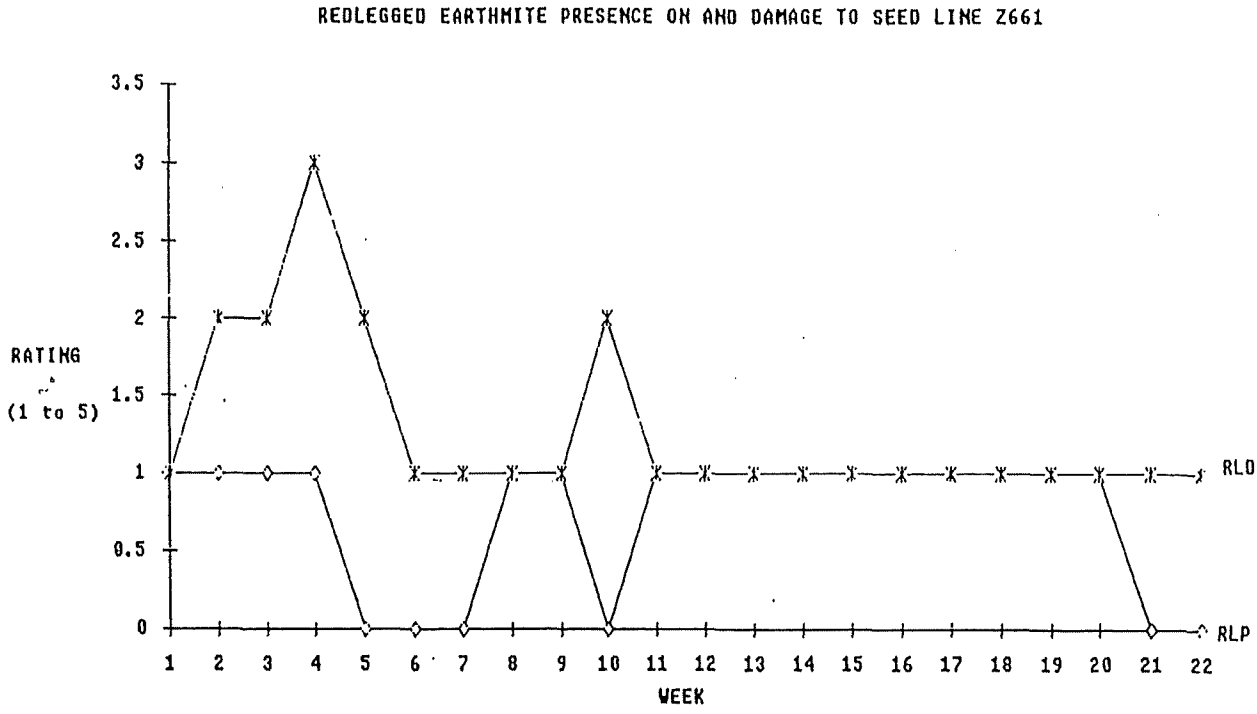



FIGURE 4: Example of a seed line very susceptible to redlegged earthmites.

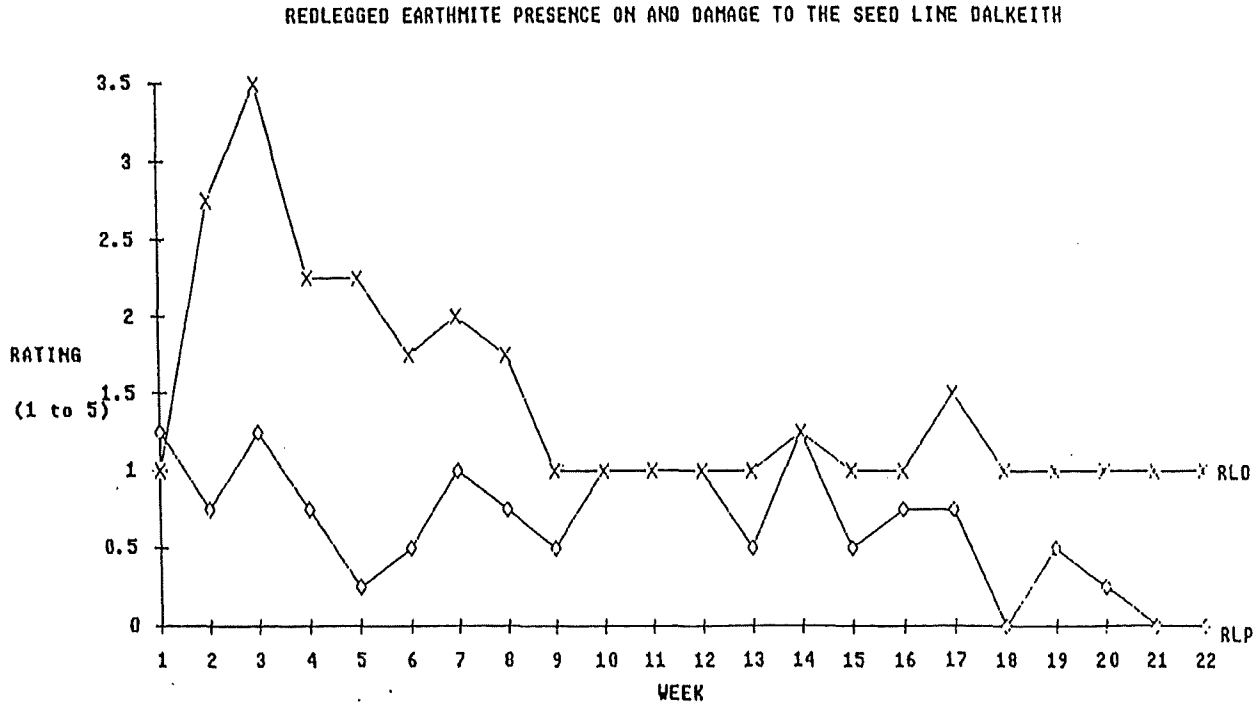


FIGURE 1: Example of a seed line exhibiting some tolerance to redlegged earthmite.

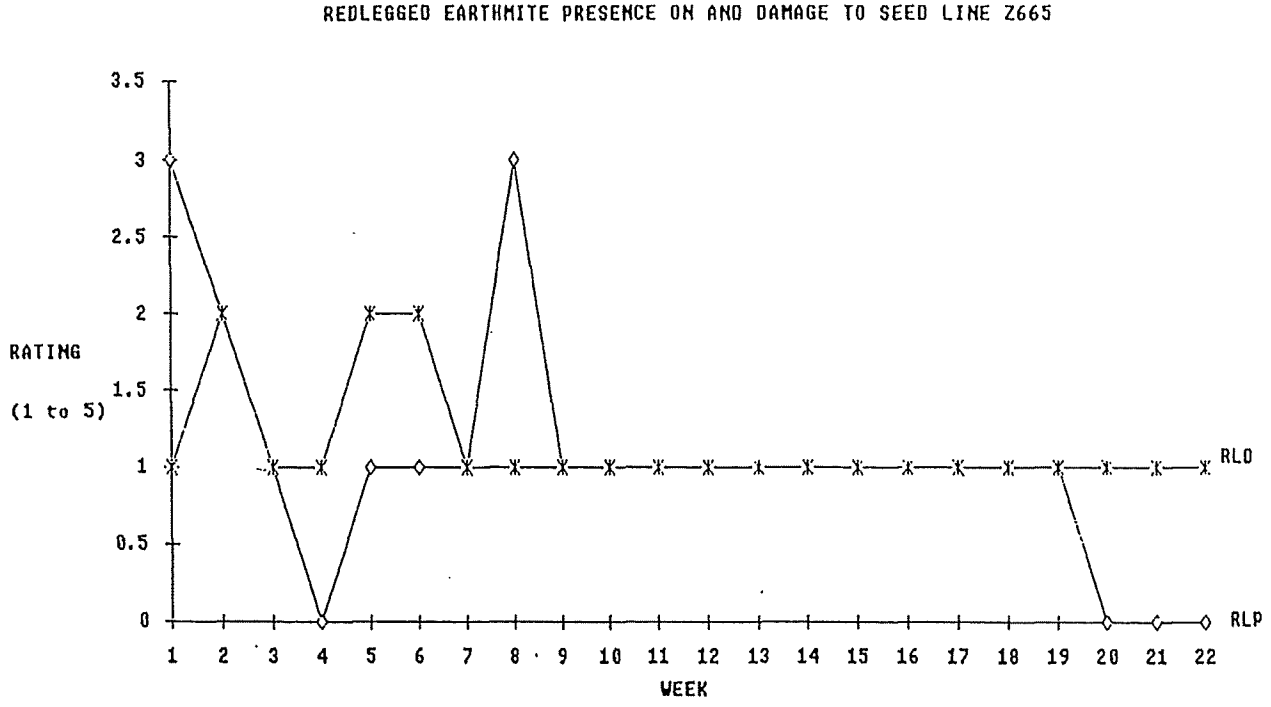
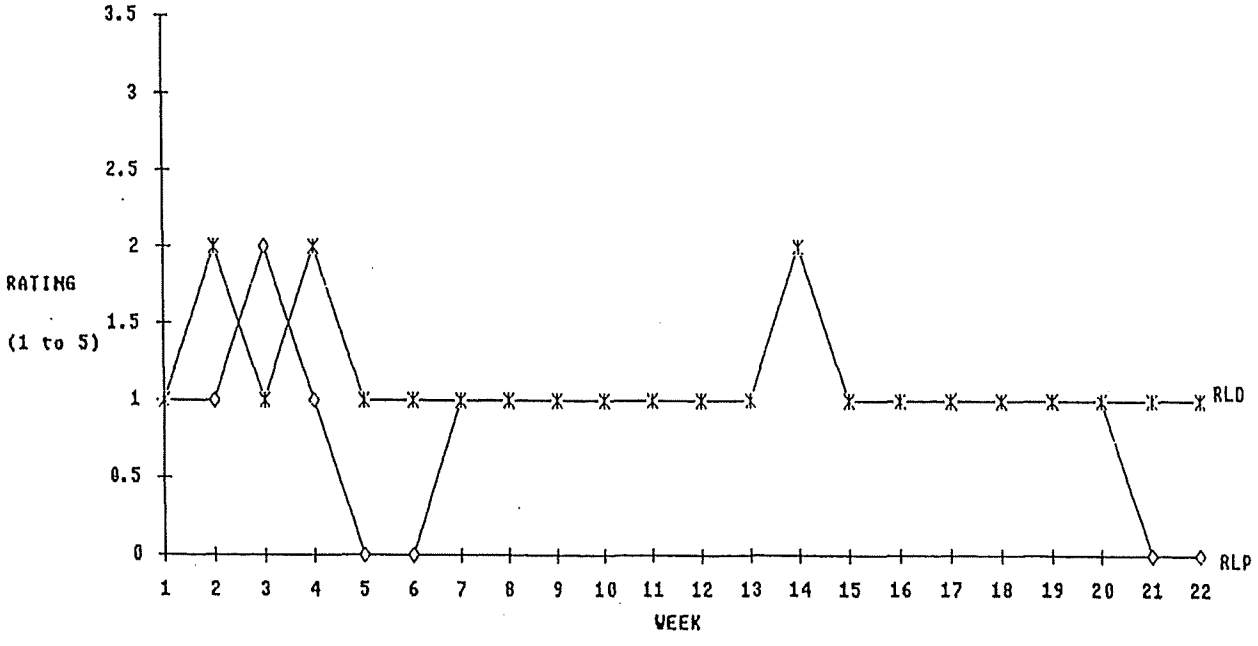



FIGURE 2: Example of a medic seed line exhibiting only minor redlegged earthmite tolerance.



COMMENTS:

Plants were sown in 1 metre rows at a rate of 1 gram per row. Rows were ungrazed. The seed line Z716 failed to germinate probably because of poor seed quality.

Rating system:

| | | |
|---|---|---|
| redlegged earthmite presence | 1 = low | 5 = high |
| redlegged earthmite damage | 1 = low | 5 = severe |

Lines were primarily ranked as:

| | |
|---|---|
| some tolerance (figure 1): | Z653, Z664, Z665, Z705, Z711, Z714, Z715. |
| minor tolerance (figure 2): | Z654, Z655, Z656, Z657, Z658, Z659, Z660, Z662, Z663, Z708, Z709, Z710, Z712, Z713 |
| susceptible (figure 3): | Z661 |
| 'control' (figure 4) | Dalkeith sub-clover |

The majority of these lines will be evaluated in replicated rows in 1990. All lines will be seed increased in the coming years until large enough quantities of seed are available for large plot evaluation.