1989

# Serradella variety evaluation.

C. K. Revell

2. SERRADELLA VARIETY EVALUATION

a) Large Machine Sown Plots - New Sowings

TRIAL TITLE: Serradella Variety Trial

TRIAL NUMBER: 89ME83

LOCATION: Korbelka (R. Hooper)

SOIL TYPE: Yellow sandplain (pH 0 - 10 cm 4.43, 1:5 $CaCl_2$)

SOWING DATE: 22/5/89 Seeding Rate: 5 kg/ha

FERTILIZER: 150 kg/ha Superphosphate

RESULTS: Pasture establishment

| Species | Plant Counts (sq m) 8/8/89 | Days to Flower | Seed Yield (kg/ha) |
|---|---|---|---|
| O. Compressus | | | |
| Madeira | 53 | 106 | 79 |
| Paros | 50 | 98 | 144 |
| GM 065.2 | 38 | 107 | 90 |
| T. subclover | | | |
| Nungarin | - | - | - |
| L.S.D. ($p<0.05$) | 12 | 1 | 24 |

COMMENTS:

Pasture ungrazed. Site sprayed for insect control at seedling stage. Serradella establishment was poor due to variable depth of seeding. Trailing leaf harrows produced ridges above every second row resulting in reduced plant emergence.

Sub. clover emergence was poor due to the use of old seed with a low germination percentage.

Paros serradella appears to be able to produce mature seed 1 - 2 weeks earlier than Madeira even though days to first flower are often similar. This is an obvious advantage in a low rainfall environment.

TRIAL TITLE: Serradella Variety Trial

TRIAL NUMBER: 89ME84

LOCATION: Mukinbudin (E. Maddock)

SOIL TYPE: Yellow sandplain (pH 0 - 10 cm 4.36, 1:5 $CaCl_2$)

SOWING DATE: 24/5/89 Seeding Rate: 5 kg/ha

FERTILIZER: 150 kg/ha Superphosphate at seeding
50 kg/ha Potash topdressed 11/7/89
100 kg/ha Super Cu Mo Zn topdressed 17/7/89

RESULTS: Pasture establishment

| Species | Plant Counts (sq m) 11/7/89 | Days to flower | Seed Yield (kg/ha) |
|---|---|---|---|
| O. Compressus | | | |
| Madeira | 80 | 106 | 43 |
| Paros | 62 | 103 | 80 |
| GM 065.2 | 47 | 108 | 49 |
| T. subclover | | | |
| Nungarin | 2 | - | - |
| L.S.D. ($p<0.05$) | 16 | 1 | 31 |

COMMENTS:

Pasture ungrazed. Site sprayed for insect control at seedling stage.

Sub. clover emergence was poor due to the use of old seed with a low germination percentage.

Seed production of serradella was low at both sites due to poor establishment and dry spring conditions. Paros produced significantly more seed than Madeira under these conditions.

TRIAL TITLE: Serradella/Grass mixtures for acidic sandplain soils.

TRIAL NUMBER: 88ME89

LOCATION: North Bodallin (Price)

SOIL TYPE: Yellow sandplain (pH 0 - 10 cm 4.4, 1:5 $CaCl_2$)

TREATMENTS: Resown 22/5/89 Seeding Rate: Serradella 15 kg/ha
Grass 10 kg/ha

FERTILIZER: 100 kg/ha superphosphate at seeding
90 kg/ha Agran topdressed on grass plots 12/6/89
100 kg/ha superphosphate topdressed on regen pasture 12/6/89
50 kg/ha Potash topdressed on 12/7/89

RESULTS: Pasture establishment

| Treatment | Plant Counts (sq m) 7/7/89 | Seed Reserve (kg/ha) |
|---|---|---|
| Madeira | 257 | 121 |
| Wimmera Ryegrass | - | - |
| Paros | 239 | 94 |
| Madeira/Wimmera | - | 109 |
| Madeira (regen) | 1215 | 221 |
| Madeira (est from pods) | - | 64 |
| L.S.D. ($p<0.05$) | | 74 |

COMMENTS:

Site ungrazed for the entire growing season. Insects controlled at seedling stage.

Site was reseeded in 1989 due to failure of grasses in 1988. One serradella treatment was left to regenerate and was particularly impressive.

The site is located on a gradual slope and seed yields declined consistently down the slope.

b) Large Machine Sown Plots - Regeneration

TRIAL TITLE: Serradella Variety Trial

TRIAL NUMBER: 88ME88

LOCATION: Woolocutty (M. Sedgewick)

SOIL TYPE: Gravelly loamy sand (pH 0 - 10 cm 4.8, 1:5 $CaCl_2$)

FERTILIZER: Nil

RESULTS: Pasture regeneration

| Species | Plant Counts (sq m) 7/7/89 | Seed Yield (kg/ha) |
|---|---|---|
| O. Compressus | | |
| MC 2 | 3426 | 56.5 |
| DP 6 | 2378 | 20.2 |
| Tauro | 1993 | 36.8 |
| M. murex | | |
| GRC 5658.2 | 910 | 37.4 |
| GRC 5661 | 348 | 29.9 |
| T. cherleri | | |
| Beenong | 472 | 27.7 |
| T. subclover | | |
| Nungarin | 565 | 85.8 |
| L.S.D. ($p<0.05$) | 486 | 40.9 |

COMMENTS:

Site paddock grazed for the entire growing season. Pastures contained a high capeweed content. Madeira plots (MC2) provided the highest legume content.

TRIAL TITLE: Management of Serradella Pastures

TRIAL NUMBER: 87M92

LOCATION: South Carrabin annexe

SOIL TYPE: Yellow loamy sand (pH 0 - 10 cm 4.4, 1:5 $CaCl_2$)

VARIETY: Madeira

RESULTS: Serradella regeneration 1989

| 1987/1988 Treatments | Serradella Plant Counts (sq m) 10/7/89 | Serradella Seed Reserve (kg/ha) No spray | Amine spray |
|---|---|---|---|
| No Summer Grazing/No Autumn Cultivation | 2332 | 125 | 96 |
| No Summer Grazing/Autumn Cultivation | 1718 | 128 | 92 |
| Summmer Grazing/No Autumn Cultivation | 1613 | 128 | 113 |
| Summer Grazing/Autumn Cultivation | 1317 | 94 | 150 |
| Summer Graze Work/Seed cereal | 1995 | 217 | 131 |
| Summer Graze Direct drill cereal | 2103 | 243 | 160 |
| L.S.D. ($p<0.05$) | 859 | 77 | 95 |

COMMENTS:

Pastures were only lightly grazed during growing season.

Regeneration of serradella was high and was particularly impressive after the cereal crop treatments. These plots had the highest serradella content and were the most productive during the growing season. The serradella seed reserve at the end of the season was approximately 80% higher relative to other treatments.

Half of each plot was sprayed with 200 ml/ha 2,4 D amine on 9th August for capeweed control. Seed production of serradella in these areas was reduced on average by 20%. In the treatments with the highest serradella content however, seed production was reduced by up to 46%. (These figures represent the total seed reserve and not just seed produced in 1989.)

TRIAL TITLE: Establishing Serradella Under a Cereal Crop.

TRIAL NUMBER: 87M64

LOCATION: South Carrabin annexe

SOIL TYPE: Yellow loamy sand, (pH 0 - 10 cm 5.1, 1:5 $CaCl_2$)

VARIETY: Madeira

RESULTS: Pasture Regeneration.

| Treatment | Serradella Plant Counts (sq m) Regen from 1987 pod 4/8/89 | Total regen 87/88 10/8/89 |
|---|---|---|
| Undersown 2.5 kg/ha topdressed. | 6 | 472 |
| Undersown 5.0 kg/ha topdressed. | 15 | 705 |
| Undersown 10 kg/ha topdressed. | 29 | 806 |
| Undersown 20 kg/ha topdressed. | 27 | 748 |
| Undersown 80 kg/ha topdressed. | 111 | 1538 |
| Undersown 2.5 kg/ha - drilled | 23 | 186 |
| Undersown 5.0 kg/ha - drilled | 13 | 159 |
| Undersown 10 kg/ha - drilled | 20 | 557 |
| Undersown 20 kg/ha - drilled | 19 | 276 |
| Undersown 80 kg/ha - drilled | 55 | 700 |
| L.S.D. ($p<0.05$) | 35 | 659 |

COMMENTS:

Pasture paddock grazed. Serradella regeneration was superior where pods had been initially topdressed on the soil surface. Plant numbers were similar for pod rates of 5, 10 and 20 kg/ha. Only a small contribution to total plant density appeared to come from podded seed undersown in 1987. Management to ensure maximum seed set possible in the regenerating year after undersowing is therefore very important. Another trial evaluating the technique of undersowing serradella pods commenced in 1989 - Trial number 89SC17. Establishment will be measured in 1990.

RESULTS: Pasture regeneration (after use of dehulled seed)

| Treatment Seeding Rate (kg/ha) | Plant Counts (sq m) 5/4//89 | Plant Counts (sq/m) 20/7/89 | Seed Reserve (kg/ha) |
|---|---|---|---|
| Inoculated Seed | | | |
| 2 | 71 | 1938 | 169 |
| 4 | 144 | 3119 | 157 |
| 8 | 172 | 2899 | 142 |
| 16 | 116 | 2988 | 245 |
| 32 | 102 | 2807 | 203 |
| Non-inoculated Seed | | | |
| 2 | 69 | 2256 | 181 |
| 4 | 119 | 3071 | 169 |
| 8 | 161 | 2581 | 254 |
| 16 | 83 | 2922 | 261 |
| 32 | 67 | 2648 | 244 |
| L.S.D. ($p<0.05$) | 67 | 1140 | 113 |

COMMENTS:

Pasture paddock grazed.

Excellent regeneration of serradella which represented between 10 - 15% of 1988 seed production. A seeding rate of about 4 kg/ha of dehulled seed should be the target for this type of establishment system. The use of dehulled seed is preferred over the use of pods as the most efficient means to establish a serradella pasture however attention to sowing time and weed control with current varieties is crucial.

Despite the high level of regeneration, however, seed reserves have fallen to approximately 50 % of the quantity produced in 1988. Studies need to be undertaken to quantify these losses in terms of factors such as grazing and germination etc.

b) Large Machine Sown Plots - Cereal Grain Yields

TRIAL TITLE: Seradella Variety Trial

TRIAL NUMBER: 87M62

LOCATION: South Carrabin annexe

SOIL TYPE: Yellow Sandplain (pH 0 - 10 cm 4.4, 1:5 $CaCl_2$)

VARIETY: Gutha Seeding Rate: 45 kg/ha

SOWING DATE: 18/5/89 Sprayseed/Direct Drill

FERTILIZER: 120 kg/ha plain superphosphate
Nitrogen topdressed as Agran on 12/6/89

RESULTS: Wheat grain yields

| Variety | Grain Yields (kg/ha) |
|---|---|
| O. compressus | |
| Pitman | 413 |
| Uniserra | 377 |
| MC 1 | 479 |
| MC 2 | 593 |
| DP 6 | 434 |
| M 115 | 465 |
| M 167 | 458 |
| GM 065.2 | 422 |
| GT 046 | 568 |
| GS 046.1 | 509 |
| Tauro | 457 |
| O. pinnatus | |
| GM 134.1 | 420 |
| T. subterraneum | |
| Nungarin | 428 |
| T. cherleri | |
| Beenong | 405 |
| T. hirtum | |
| Kondinin | 409 |
| M. murex | |
| N 3172 | 446 |
| Natural Pasture Nil N | 348 |
| Natural Pasture 20 kg/ha N | 317 |
| Natural Pasture 40 kg/ha N | 371 |
| Natural Pasture 80 kg/ha N | 337 |
| L.S.D. ($p<0.05$) | 156 |

COMMENTS:
Site sprayed with 1.0 L//ha Brominil M + 1.0 L/ha Hoegrass on 20/6/89. Late germinations of serradella were evident under the crop. Wheat showed no response to fertilizer nitrogen at his site however yields were higher following legume pastures.