Vetch, Seeding Systems, Southern Mallee (Pinnaroo), South Australia.

Authors
Michael Moodie and Ray Correll

Aim
To evaluate the effects of different seeding systems, which alter seed bed utilization on vetch biomass production.

Treatments
Seeding treatments: Three seeding systems which affect Seed Bed Utilisation (SBU).
-Narrow disc: Boss NX20 Double Disc, 7-inch row spacing (High SBU)
-Paired row: Root Boot paired row opener (4-inch spread), 11-inch row spacing (Moderate SBU)
-Wide row knifepoint: Horward Bagshaw PSS (13 mm knife point), 11-inch row spacing (Low SBU)
Varieties: Three varieties (Studenica, Timok and Morava).
Disease management: Two strategies (Full disease control -Aviator Xpro applied in July and August; Nil – No fungicides applied).

Table 1. Other Site Details

	Pinnaroo - Flat
Sowing Dates	25th April
Plant Density (plants/m²)	40 - 60
Stubble height (cm)	10
Row Spacing (cm)	28
Fertiliser (kg/ha)[1]	50

[1] Granulock Z (N 11, P 21.8, S 4, Zn 1)

Results and Interpretation

- Key messages: Narrow disc seeding system resulted 72% and 87% more biomass than wide row knifepoint and paired row systems across all varieties. Timok yielded 1.5 t/ha of biomass when averaged across all harvesting dates, which was 13% and 25% higher than Studenica and Morava.

- Establishment and plant growth: The different seeding systems had a large effect on plant establishment with greater number of plants emerging in the disc sown treatments. As the trial was dry sown, the discs were not able to penetrate as deep as the tine-based systems (Root Boot and PSS) and therefore it is possible that the shallower sowing has resulted in an establishment advantage. However, the seed bed was noticeably more cloddy following seeding with the tine-based systems, which may also have had a negative effect on the establishment, as seed-soil contact was likely to be poorer.

- Biomass: The disc seeding system resulted in 99 – 166% more biomass than the tine systems at each harvest date. By the final September harvest data, the narrow row disc system with the highest SBU resulted in over 1 t/ha (117 – 166%) more biomass than the other seeding systems.

  Overall Timok produced 13% - 25% more biomass than other varieties. For example, September harvests of Timok produced 250 kg/ha (10%) more biomass than Studenica and 600 kg/ha (27%) more biomass than Morava (Table 3). However, it is possible that the growing season of Morava could have been extended as it has a later flowering and maturity time relative to Studenica and Timok.

  Fungicide treatments did not influence biomass yields as disease symptoms were absent in the canopy. This could have been a result of relatively low biomass production and dry growing conditions.

  The relationship between plant number and biomass was investigated (Figure 1). The disc system had both the highest number of plants and the greatest biomass. However, there was no significant

relationship between number of plants and biomass within the disc or paired row sowing systems. This indicates that the SBU benefits of the disc systems may continue even after plant establishment and thus promoting biomass. There was a significant relationship between plant number and biomass in the wide row knifepoint system, which could suggest that plant establishment is more important for biomass accumulation in seeding systems that have a lower SBU.

Table 2: Effect of seeding system on the accumulation of vetch dry matter (kg/ha).

Harvest date	Narrow Disc	Paired row	Wide row knife point	LSD
July	683	301	343	85
August	1689	636	778	208
September	3315	2107	2177	284

Table 3: Effect of vetch variety on the accumulation of vetch dry matter (kg/ha).

Harvest date	Studenica	Timok	Morava	LSD
July	366	499	462	38
August	1029	1168	907	90
September	2558	2816	2224	133

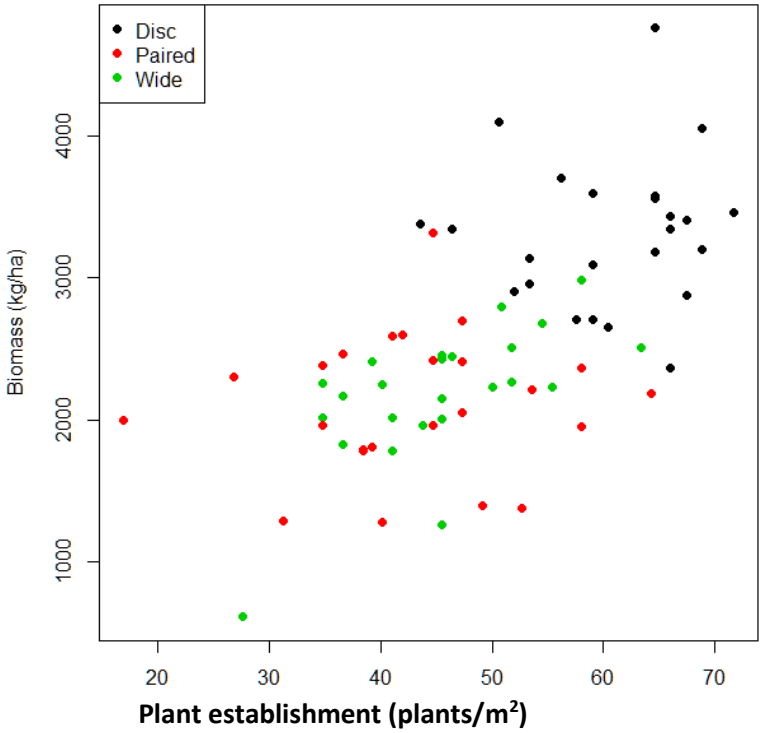

Figure 1. Relationship between September biomass and plant establishment

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