

Vetch for grain and hay on EP

Stuart Nagel¹, Gregg Kirby¹ and Leigh Davis²

¹SARDI, Waite Campus; ²SARDI, Minnipa Agricultural Centre

RESEARCH



Almost ready

Location:
Minnipa Agricultural Centre, paddock S5

Rainfall
Av. Annual: 325 mm
Av. GSR: 241 mm
2015 Total: 333 mm
2015 GSR: 258 mm

Yield
Potential:
Grain: 2-2.5 t/ha
Dry matter: 5-6 t/ha
Actual:
Grain: Site mean 1.4 t/ha, highest 2.1 t/ha
Dry matter: Site mean 4.1 t/ha, highest 4.3 t/ha

Paddock History
2014: Wheat
2013: Barley
2012: Canola

Soil Type
Red Loam

Diseases
No disease was observed

Plot Size
1.5 m x 10 m x 3 reps

Yield Limiting Factors
None

Location:
Piednippie/Haslam - Trezona

Rainfall
Av. Annual: 324 mm
Av. GSR: 220 mm
2015 Total: 189 mm
2015 GSR: 147 mm

Yield
Potential: 2-3 t/ha dry matter
Actual: site mean 1.1 t/ha, highest 1.5 t/ha

Paddock History
2015: Canola
2014: Axe wheat
2013: Grass free medic pasture

Soil Type
Grey calcareous sand

Diseases
No disease was observed

Plot Size
1.5 m x 10 m x 3 reps

Yield Limiting Factors
Poor sub moisture at sowing, with no significant follow up rainfall event until mid June

Key messages

- Vetch grain and dry matter yields were very good at Minnipa in 2015, the grain trial mean was 1.4 t/ha with the top lines achieving 2.1 t/ha, mean dry matter yields were 4.1 t/ha with the top line achieving 4.3 t/ha.
- The Piednippie SAGIT trial was poor, suffering from moisture stress post emergence which stunted growth and limited the potential once the crop received rain in mid-June, the site mean was only 1.1 t/ha of dry matter.
- Early sowing (mid-April) can achieve good results but is heavily reliant on either good subsoil moisture or follow-up rain.
- The new varieties, Volga and Timok continue to out yield all existing varieties in both grain and hay production on the EP.
- Herbicide choices for vetch are very dependent on local conditions so talk to your local agronomist about the best options for your conditions.

Why do the trial?

The vetch trials on Eyre Peninsula in 2015 were expanded to include a primary trial of breeding material funded by GRDC, at Minnipa, to investigate advanced common vetch lines with specific traits best suited to this region, and enable comparison with other sites in the southern cropping region.

SAGIT trials looking at vetch for a genuine legume break crop option for cereal and mixed farmers in the marginal cropping areas of South Australia were conducted at Piednippie and Minnipa. Other trials were conducted at Morchard, Loxton and Kingsford research centre.

How was it done?

The objective of this research is to investigate material bred in GRDC funded projects, which may not have been suitable for broad scale release, but may be locally adapted to these areas with the potential to be used as new varieties specifically for the local area.

For the best weed control, particularly for broadleaved weeds, it can be most economical and effective to control pre-sowing by allowing time for a germination and kill with appropriate chemicals pre-sowing, combined with the use of IBS or PSPE chemicals (like diuron, simazine and metribuzine). This is not always practical when dry sowing or taking advantage of an early break, however it is very effective when the season permits as there is no currently registered chemicals for in-crop broadleaved weed control in vetch. As mentioned above talk to your local agronomist for the best options for your conditions.

What happened?

An excellent early rain in April at Minnipa saw sowing commence on 22 April, earlier than traditional planting times but there was excellent soil moisture. This allowed good early establishment, and the strong early vigour produced the very good grain and dry matter yields achieved in 2015 (Table 3). There had been some reports of rust at the Minnipa Agricultural Centre in 2014 but there were no major disease problems in 2015.

Table 1 Trial details for Minnipa 2015.

Sowing date	SAGIT Vetch GRDC Primary Vetch	22 April 23 April
Fertiliser	No fertiliser	
Pre sowing chemicals	2.0 L/ha Sprayseed + 1.5 L/ha TriflurX	22 April
Post sowing, pre- emergent	300 g/ha Diuron + 100 g/ha Lexone + 1.0 L/ha Lorsban PSPE	23 April
Insecticides	200 ml/ha Lemat	11 June
	500 ml/ha Asound Duo + 200 ml/ha LeMat	13 July
	1 L/ha Astound Duo + 200 ml/ha Dimethoate	7 Sept
Grass herbicides	180 ml/ha Elantra Xtreme + 1 L/100L Kwicken + 500 ml/ha Astound Duo	25 June
Hay cut	SAGIT Vetch, cut for hay	9 Sept
Desiccation	2 L/ha Gramoxone	20 Oct
Grain harvest	GRDC Primary Vetch	30 Oct

Table 2 Trial details for Piednippie 2015.

Sowing date		27 April
Fertiliser	No Fertiliser	
Pre sowing chemicals	1.5 L/ha Sprayseed + 1.5 L/ha TriflurX + 400 g/ha Diuron + 100 g/ha Lexone + 1.5 L/ha Lorsban (IBS)	27 April
Grass herbicides	185 ml/ha Elantra Xtreme + 500 ml/ha Astound Duo + 1 L/ha/100L Kwicken	25 June
Hay cut	Cut for hay	8 Sept

Table 3 Mean dry matter yields for Minnipa and Piednippie 2015.

Genotype	Minnipa			Piednippie		
	Rank	Dry matter (t/ha)	% Timok	Rank	Dry matter (t/ha)	% Timok
34559	8	4.12	96.7	18	1.02	88.1
34748	13	4.01	94.1	5	1.28	110.0
34822	4	4.23	99.3	17	1.03	88.5
34831	9	4.11	96.6	9	1.22	104.8
34842	1	4.37	102.6	8	1.22	105.2
34876	7	4.14	97.2	12	1.15	99.3
34883	16	3.98	93.4	3	1.32	113.3
34885	2	4.29	100.8	6	1.26	108.7
35019	19	3.82	89.8	15	1.08	92.6
35036	18	3.85	90.4	14	1.08	93.1
35122	10	4.07	95.5	2	1.33	114.8
37003	11	4.05	95.1	16	1.07	91.9
37058	6	4.15	97.5	10	1.22	104.7
37107	20	3.69	86.7	13	1.09	93.5
37457	17	3.96	93.0	4	1.30	111.9
34823-2	5	4.20	98.5	7	1.23	106.1
35427-1	14	3.99	93.7	20	1.02	87.6
Rasina	15	3.98	93.5	19	1.02	87.7
Timok	3	4.26	100.0	11	1.16	100.0
Volga	12	4.01	94.1	1	1.51	129.5

Table 4 Grain yield of selected lines from Minnipa GRDC primary trial, 2015.

Genotype	Grain Yield (t/ha)	% Timok
37731	2.16	122.4
37670	2.09	118.7
35444-3	2.04	115.9
37695	2.03	115.2
37654	2.02	114.7
35427-1	1.94	109.9
37102	1.91	108.2
Volga	1.86	105.7
Timok	1.76	100.0
34876	1.72	97.3
37107	1.62	91.7
Rasina	1.51	85.5
Blanchefleur	1.35	76.3
Morava	1.15	65.0
Site Mean	1.41	

The trial at Piednippie was sown after a false break in mid-April. It did not receive any further significant rainfall until mid-June. The trial emerged well but this prolonged period of moisture stress severely set back the vetch potential and it never fully recovered. Weed control was good early but the June rains enabled a good germination of medics. The medic competed with the vetch as the season progressed, due to a lack of sufficient competition/canopy in the vetch, affecting the vetch yields. The vetch and medic mix would have produced a productive pasture.

Of the existing and new varieties trialled in 2015 Timok and Volga again performed well, both out yielding all other current varieties in both grain and dry matter production. In both trials at Minnipa a number of lines out yielded these new varieties, with some of the newer crosses showing impressive grain yields. These lines were not in the dry matter trials, so their performances for dry matter production will need to be assessed.

The rainfall during July (35 mm) and August (80 mm) at Minnipa meant the later lines and varieties yielded well in the SAGIT trial. In

previous years later lines suffered yield penalties due to lack of late winter/early spring rainfall (in 2014 Minnipa only received 6 mm in August). This good rainfall produced contrasting results from 2014, where SA 37107 and SA 34748 were the highest yielding lines. In 2015 these lines were among the lower yielding. Over the 2 years of trials SA 34876 and SA34823-2 achieved more consistent yields of dry matter and SA 34876 in particular showed impressive early vigour and winter growth across both years.

Disease screening of the lines in the SAGIT trials is ongoing as trials conducted in 2015 were inconclusive. Recommendations on material suitable for release from this project will be made after the conclusion of the 2016 season.

What does this mean?

These trials demonstrate vetch can yield well in both grain and dry matter on Eyre Peninsula. The yields combined with the recognised benefits vetch provides to the cropping rotation of nitrogen fixation, a disease break, especially Rhizoctonia, and chance to control grass weeds, show vetch can be an integral part of a profitable farming system.

For more information on the value of vetch in crop rotations see an article by Dr Chris McDonough <http://msfp.org.au/vetch-maximises-n-advantage/>

The new varieties Volga (Heritage Seeds) and Timok (Seed Distributors) were available for purchase in 2016. Both companies report that they have sold out of seed this season, so for access to seed for next season order now.

The trials have shown that there is some promising material in the breeding program that can out yield existing varieties.

2016 will be the final set of SAGIT trials to identify lines with the potential to fit into the cropping system on western EP. There are lines which have shown excellent early vigour and winter growth which would benefit a mixed farming system.

The GRDC trials have shown impressive yield potential of several new lines, that have performed well both on EP and across the state. These lines require further research to validate their potential.

Acknowledgements

The National Vetch Breeding Program would like to thank SAGIT (project code S914), GRDC (DAS 00149), RIRDC and SARDI for funding this program and acknowledge the ongoing support and interest provided by Australian farmers. Farmers and not for profit farmer groups and organisations provide trial sites, feedback, advice, recommendations and their wish lists for future varieties to the program all of which are gratefully received and appreciated.

