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Project Code	
Project Type	

## FINAL REPORT 2017

**PROJECT CODE** : S914

### PROJECT TITLE

Common Vetch as a break crop for marginal cropping systems

### PROJECT DURATION

<b>Project Start date</b>	1 July 2014					
<b>Project End date</b>	30 June 2017					
<b>SAGIT Funding Request</b>	2014/15		2015/16		2016/17	

### PROJECT SUPERVISOR CONTACT DETAILS

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## PROJECT REPORT

### Executive Summary

Trials of different vetch germplasm were conducted in the lower rainfall cropping areas of South Australia over 3 years, investigating germplasm from previous GRDC vetch breeding projects. Of the germplasm investigated, one line (SA 34876), displayed ideal characteristics for inclusion in cropping rotations in these areas.

- Trials looking at vetch lines with potential to be used as the legume component in a cropping rotation in more marginal cropping/mixed farming regions of South Australia were conducted in 2014-15-16
- Sites included Loxton, Karoonda, Minnipa, Morchard, Piednippie and Kingsford Research Farm (Roseworthy)
- These trials demonstrated the potential of one line, SA 34876, to provide a reliable legume option in these lower rainfall cropping systems
- SA 34876 is an early flowering (full flowering approx. 90 days) and maturing line with improved cold and frost tolerance, it has excellent winter growth with the ability to provide good grazing or hay early in the season to fill the feed gap. It's early maturity will also enable it to produce seed in more seasons than the later maturing varieties which can require late spring rain to reach seed maturity.
- This research has the potential to offer a more consistent and reliable legume option to farmers in the lower rainfall areas of South Australia. This will enable more profitable and sustainable cropping rotations in these areas.

## Project Objectives

- Provide a genuine legume break crop option for cereal and mixed farmers in the marginal cropping areas of South Australia. Focusing on Western Eyre Peninsula, the Upper North and the Murray lands/ Mallee.
- Trial advanced common vetch lines with specific targeted traits in replicated trials in these regions of South Australia (Western Eyre Peninsula, the upper north and the Murray lands/ Mallee) for assessment as potential new releases.
- Validate the benefits and potential of common vetch in the targeted areas.
- Provide farmers with high yielding alternative vetch varieties that are well adapted to sandy-alkaline soils in low rainfall environments. Release variety/varieties that are locally adapted to these niche areas, which may not be suitable for broad scale release.
- Provide producers and users with agronomic packages for new varieties.

## Overall Performance

All KPI's proposed for this project were achieved. Trials were successfully conducted at all sites, with satisfactory results produced from all sites except Karoonda in 2014. This site was sown for us by the NVA group in 2014 and they neglected to check paddock history, resulting in the trial being sown in a paddock with a residual herbicide (Logran) which severely affected plant growth and development in spring. Results for this site have been included in the analysis but are not considered to correlate with any other site. The Vetch Breeding group sowed all future trials in the Mallee to prevent a repeat of this event.

The trials conducted demonstrated the suitability of one line to be selected for release as a new variety targeted at the low rainfall, mixed farming areas of South Australia.

Co-operators involved in this project, Minnipa Research Centre (Leigh Davis), Gilmore Catford (Morchard), Bulfa Burra Farms (Loxton), Michael Moodie (MSFS), Trezona family (Piednippie), Loller family Karoonda, Rob Wheeler (NVA) and Joop van Leur (pathologist NSW)

Staff involved in the project, Stuart Nagel, Gregg Kirby and Rade Matic (SARDI).

## Key Performance Indicators (KPI)

<b>KPI</b>	<b>Achieved (Y/N)</b>	<b>If not achieved, please state reason.</b>
<b>1. Multiple replicated trials in targeted regions of South Australia.</b> Replicated trials of lines selected for this project were planted at 5 sites in South Australia in 2014, Karoonda, Morchard, Minnipa, Piednippie and Kingsford research farm. In 2015 and 2016 they were planted at Loxton, Morchard, Minnipa, Piednippie and Kingsford research farm.	Achieved December 2014	

<p>The results from trials in 2014 drove selection of lines to be included at each site in replicated trials in 2015 and 2016. (See KPI 4 for more details)</p>		
<p><b>2. Disease screening of selected lines.</b> Disease screening of advanced lines was conducted at the Tamworth Ag Institute (NSW) by Joop van Leur in 2015 and 2016</p> <p>In field trials conducted at Tamworth in 2015, after heavy inoculation with rust the control susceptible lines (Blanchefleur, Languedoc and Pink Avago) showed good infection with the rust, of the advance lines tested only SA 34748 and SA 35122 showed minor infection. The pathologist was not satisfied with the results achieved and retested this material in glasshouse and field trials in 2016 to verify the results and to focus on SA 34876.</p> <p>Screening was repeated by Dr van Leur in 2016 and he concluded that SA 34876 was resistant to rust.</p> <p>In 2016 rust occurred naturally in trials at Kingsford research farm, susceptible lines developed heavy infections during October. SA 34876 showed good levels of resistance, not showing any symptoms of rust infection in any plot or single row. This combined with Dr. van Leur's results confirmed the selected line SA 34876 was resistant to rust.</p>	<p>Achieved December 2014</p>	
<p><b>3. Fodder analysis of all material for comparison against existing common vetch varieties.</b> Analysis of fodder samples taken from selected advanced lines was conducted.</p> <p>All lines tested were in the normal range of vetch hay.</p> <p>Some further testing was conducted looking at quality characteristics from different times of cutting, 1<sup>st</sup> and 2<sup>nd</sup> cuts where possible. (See results Tables 9 and 10, Appendix A)</p>	<p>Achieved February 2015</p>	
<p><b>4. Multiple replicated trials in all of the targeted regions of South Australia</b> Replicated trials of lines selected from trials in 2014 (KPI 1) were planted at 5 sites in South Australia in 2015 and 2016, at Loxton, Morchard, Minnipa, Piednippie and Kingsford research farm. The first four sites were cut to assess dry matter production and the Kingsford and Morchard sites was assessed for seed production (see results in Appendix A).</p> <p>In 2015 all site produced satisfactory results with the exception of Piednippie which was sown on the</p>	<p>Achieved December 2015 and 2016</p>	

27<sup>th</sup> April, after a minor rainfall event (6mm), there was no further significant rainfall until 16<sup>th</sup> June this severely set back growth and reduced the potential of the crop resulting in very poor yields. Minnipa and Morchard both recorded excellent yields, and Loxton was able to be cut twice for hay after a significant rainfall soon after the first fodder cut, although the quality of the fodder produced from the second cut was well below the first cut (see Tables 9 and 10, Appendix A)

In 2016 trials were again sown in the same regions. Results reflected the seasons at each site with Piednippie again having a slow start before receiving good rainfall in winter, enabling the trial to recover. Loxton and Morchard were sown dry in mid-May (1 month later than 2015) and also did not receive an opening break till early June. This slowed the development of the trials particularly at Loxton which also received some damage from spray drift. Minnipa and Kingsford both had good seasons and the results reflect the good rainfall which enabled later maturing lines to outperform the early lines (see results in Appendix A).

There was a strong correlation in the data between Minnipa and Morchard and a slightly weaker correlation between these 2 sites and Piednippie. However Loxton/Karoonda did not correlate with any of the other sites, different lines performed better there than all other sites.

Across all sites the line SA 34876 showed the best early vigour and winter growth in the trials (see photos Appendix B). It did not out yield all other lines at every site but it was consistently among the better performers, particularly at Morchard and Minnipa.

In GRDC grain trials at Lameroo, Minnipa, Blyth and Kingsford, the mean grain yield across all sites for SA 34876 was >2.7t/ha (sown at 40kg/ha). It also yielded above the site mean in hay trials at Blyth and Lameroo.

Its early vigour and winter growth make it an appealing prospect for mixed farmers in lower rainfall areas looking for a reliable legume option for their rotation.

**5. Discuss project progress and preliminary results at field days (Minnipa, UNFS, Karoonda)**

See section below on communication of results to farmers and industry.

Achieved  
December 2015

<p><b>6. Final assessment, analysis and selection of advanced lines.</b> From the research and trials conducted in this project the line SA 34876 has been selected for release as a new vetch variety targeted at the lower rainfall areas of South Australia.</p>	<p>Achieved November 2016</p>	
<p><b>7. Multiply breeders seed of selected line/s</b> In 2016 pure seed of the 2 most advanced lines (SA 34876 and SA 37107) from previous selections was multiplied at 2 sites. 20 kg of pure seed of SA 34876 was produced in 2016. This was again planted at 2 sites to continue multiplication in 2017. Not all seed was sown due to the extremely dry start to the season, with approximately 10 kg kept in reserve.</p>	<p>Achieved December 2016</p>	
<p><b>8. Recommendations for release of new variety</b> The line SA 34876 has shown the most potential for release as a new vetch variety across the term of this project. It is earlier flowering (around 90 days from sowing to full flowering) and maturing with improved winter growth and vigour when compared to existing varieties. Is well adapted to low rainfall environments, with the potential to provide early grazing/fodder in a mixed farming system.</p>	<p>Achieved February 2017</p>	
<p><b>9. Produce Final Report</b></p>	<p>Achieved August 2017</p>	

### Technical Information

Below is yield data of selected lines and existing varieties grown in the targeted areas. For full trial results see Appendix A.

It had been noted in discussions with farmers, agronomists and other researchers that the key characteristics required for a reliable legume crop in the targeted areas were, good early vigour, frost tolerance, improved winter growth, high fodder yields and the ability to produce seed in the majority of years. These traits were the basis for evaluation of the germplasm used in this trial.

In 2014 trials were sown at the sites mentioned in KPI1. The lines selected below (Table 1) were selected for high yields as well as the traits previously mentioned.

Trials conducted as part of GRDC projects investigating frost tolerance in vetch showed SA 34876 had the best frost tolerance of all lines/varieties tested. This combined with observations on vigour and winter growth taken in 2014 and fodder yields showed the early potential of this line. SA 34748 and SA 37107 both had high fodder yields but were less impressive in winter growth, relying on spring rainfall to put on late growth rather than winter growth.

The results from 2015 and 2016 showed similar patterns, with SA 34876 showing higher yields when the season was shorter and being similar to existing varieties at other sites. SA 34748 continued to show excellent yields in most environments but it proved to be susceptible to rust

infection so was not suitable for selection for release. The maturity of SA 37107 was later than the other lines, being similar to Timok and Rasina, meaning it could take advantage of the good seasons but not perform as well in shorter seasons.

As mentioned pathology results showed SA34748 to be susceptible to rust whereas SA 34876 and 37107 were both resistant to the disease.

Fodder analysis (see Appendix A, Table 9) showed that all lines had similar quality attributes averaging 24.2% crude protein and 10.3 MJ/kg dry matter of metabolisable energy.

The earlier maturity of SA 34876, and its distinctive seed coat and white flower mean it is an ideal candidate to complement existing vetch varieties, while standing out in a way to make it easily identifiable.

Table 1. 2014 hay yields, t/ha

2014	Site	Karoonda	Minnipa	Morchard	Piednippie	State Ave
<b>Line</b>						
34748		2.07	4.95	1.11	1.99	2.53
34876		2	4.11	1.11	1.74	2.24
37107		1.71	4.97	0.81	1.84	2.33
Timok		1.74	3.9	1.21	1.68	2.13
Volga		2.45	3.95	0.71	1.91	2.26

Table 2. 2015 hay yields, t/ha

2015	Site	Loxton	Minnipa	Morchard	Piednippie	State Ave
<b>Line</b>						
34748		2.44	4.01	4.67	1.28	3.10
34876		2.27	4.14	4.78	1.15	3.09
37107		2.52	3.69	3.93	1.09	2.81
Rasina		2.32	3.98	4.13	1.02	2.86
Timok		2.43	4.26	4.73	1.16	3.15
Volga		2.51	4.01	4.2	1.51	3.06

Table 3. 2016 hay yields, t/ha

2016	Site	Loxton	Minnipa	Morchard	Piednippie	State Ave
<b>Line</b>						
34748		1.16	3.37	2.09	2.02	2.16
34876		1.05	3.48	2.12	2.09	2.19
37107		1.11	3.21	1.90	1.84	2.01
Rasina		1.17	3.69	1.81	2.16	2.21
Timok		1.12	3.57	1.80	1.85	2.08
Volga		1.40	3.34	2.58	2.49	2.45

Table 4. Grain yields t/ha of selected lines.

Site Line	2014 Kingsford	2015 Kingsford	2015 Morchard	2016 Kingsford	2016 Morchard	3 yr mean
34748	3.00	2.26	2.13	3.3	3.18	2.77
34876	3.03	2.19	2.04	2.86	3.25	2.67
37107	2.91	2.03	1.98	3.62	3.32	2.77
Rasina		1.90	2.12	3.39	2.76	2.54
Timok	2.69	2.24	2.33	3.66	2.87	2.76
Volga	2.93	2.00	2.20	3.98	3.23	2.87

### Conclusions Reached &/or Discoveries Made

This project demonstrated the potential for vetch to be included in cropping rotations in the lower rainfall areas of South Australia. It showed that vetch could be a reliable legume option in these areas, providing a return to the system through both grazing/hay and nitrogen fixation and organic matter in the soil. The line that showed the most potential in the areas where trials were conducted was SA 34876. It displayed ideal characteristics for these mixed farming systems. It has the best cold/frost tolerance of all lines trialled, with the best early vigour and winter growth, enabling it to put on more bulk earlier in the season, producing fodder earlier to fill the feed gap that often occurs in these systems in August and September. The early maturity of SA 34876 (flowering at approx. 90 days) also means it has the potential to produce seed yields even in the lower rainfall areas which often experience sharp finishes to the season in mid to late September. This gives it a distinct advantage over existing varieties which generally don't produce adequate seed yields in these environments every year.

From the trials conducted it was concluded that the line SA 34876 was an ideal candidate for release as a new vetch variety targeted at the lower rainfall cropping areas of South Australia. Its early maturity, frost tolerance and winter growth make it a complementary addition to existing varieties, filling a gap in the catalogue of vetch varieties. SA 34876 gives farmers a shorter season, early maturing variety that has good yield potential for both grain and hay, which is rust resistant and distinct from existing varieties.

### Intellectual Property

The IP/germplasm used in this project was jointly owned by SARDI and GRDC. Freedom to operate with this material was granted prior to the commencement of the project under the provision that if anything was to be commercialized from the project, negotiations with the owners of the IP would be required.

As the project has been successful and a line is selected for release, with PBR application commenced, SAGIT, SARDI and GRDC will need to negotiate terms before the commercialization process is commenced.

Both SARDI and GRDC have been made aware of the selection/potential release and time will have to be arranged to negotiate the commercialisation.



## **Application / Communication of Results**

- Trials looking at vetch lines with potential to be used as the legume component in a cropping rotation in more marginal cropping/mixed farming regions of South Australia were conducted in 2014-15-16
- Sites included Loxton, Karoonda, Minnipa, Morchard, Piednippie and Kingsford Research Farm (Roseworthy)
- These trials demonstrated the potential of one line SA 34876 to provide a reliable legume option in these lower rainfall cropping systems
- SA 34876 is an early flowering (full flowering approx. 90 days) and maturing line with improved cold and frost tolerance, it has excellent winter growth with the ability to provide good grazing or hay early in the season to fill the feed gap. It's early maturity will also enable it to produce seed in more seasons than the later maturing varieties which can require late spring rain to reach seed maturity.
- This research has the potential to offer a more consistent and reliable legume option to farmers in the lower rainfall areas of South Australia. This will enable more profitable and sustainable cropping rotations in these areas.

Over the 3 years of this project every opportunity has been taken to promote the research undertaken, the potential benefits arising from the project and the support the National Vetch breeding program has received from SAGIT. This project was highlighted in presentations at field days at Hart, Ceduna, Minnipa, Morchard, Geranium, Strathalbyn, Karoonda, Waikerie, Wynarka, Loxton, Parrakie, Palmer and Minlaton over the last 3 years, with several of these field days being annual events. Two interviews were also conducted with ABC rural radio discussing this project. The communication of results from this project is ongoing and has been discussed at field days at Farrell Flat and Waikerie in July and August 2017.

Papers detailing the project, its progress and the results achieved have been published in the research compendiums produced by Mallee Sustainable Farming Systems, Upper North Farming Systems and Eyre Peninsular Farming Systems, these organisations are focused in the areas targeted by this project.

In general discussions on future vetch varieties and the direction of vetch breeding, several seed companies have expressed interest in the potential of a variety with the characteristics of the line selected in this project (SA 34876). Seeing it as complementary to existing varieties and with a potential fit in other grazing systems as well as cropping rotations.

## **POSSIBLE FUTURE WORK**

This project has directly led to a new project S 1417 which is finalizing the release of the line selected from these trials as a new variety (Studenica). This project (S 1417) is running variety demonstrations at Morchard, Minnipa and Waikerie. As well as increasing pure seed of the selected line and finalizing PBR applications and variety information. The variety trials will be used to promote this project and the outcomes from it throughout 2017.

<b>AUTHORISATION</b>	
Name:	Dr Kathy Ophel Keller
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Signature:	
Date:	30 August 2017

## Appendix A:

Table 5: 2014 dry matter yields, t/ha

2014 Line	Site	Karoonda	Minnipa	Morchard	Piednippie	State Ave
33258		1.89	3.64	1.12	1.68	2.08
34559		2.53	2.97	1.06	1.22	1.95
34742		1.93	3.92	1	1.61	2.12
34748		2.07	4.95	1.11	1.99	2.53
34822		2.08	3.65	0.94	1.66	2.08
34831		1.86	4.47	1.04	1.63	2.25
34842		1.84	3.61	1.37	1.7	2.13
34876		2	4.11	1.11	1.74	2.24
34883		2.32	3.66	0.65	1.71	2.09
34885		1.83	3.31	1.09	1.44	1.92
34895		2.27	3.19	0.94	1.47	1.97
35004		2.02	3.3	0.95	1.53	1.95
35019		1.67	4.57	0.79	1.69	2.18
35036		2.05	4.06	0.76	1.6	2.12
35054		1.93	3.31	0.87	1.31	1.86
35061		1.87	3.41	0.73	1.48	1.87
35122		2.03	4.2	0.93	1.88	2.26
37003		2.14	3.03	0.75	1.28	1.80
37058		1.57	3.98	1.03	1.79	2.09
37107		1.71	4.97	0.81	1.84	2.33
37248		1.99	3.05	0.73	1.55	1.83
34823-2		2.27	4.61	1.29	1.74	2.48
Timok		1.74	3.9	1.21	1.68	2.13
Volga		2.45	3.95	0.71	1.91	2.26

Table 6: 2015 Dry matter yields, t/ha

2015 Line	Site	Loxton	Minnipa	Morchard	Piednippie	State Ave
34559		2.61	4.12	4.03	1.02	2.95
34748		2.44	4.01	4.67	1.28	3.10
34822		1.94	4.23	5.15	1.03	3.09
34831		2.58	4.11	4.51	1.22	3.11
34842		2.3	4.37	4.93	1.22	3.21
34876		2.27	4.14	4.78	1.15	3.09
34883		2.33	3.98	4.23	1.32	2.97
34885		2.48	4.29	4.47	1.26	3.13

35019		2.31	3.82	4.25	1.08	2.87
35036		2.28	3.85	4.16	1.08	2.84
35122		2.37	4.07	4.54	1.33	3.08
37003		2.38	4.05	4.02	1.07	2.88
37058		2.23	4.15	4.67	1.22	3.07
37107		2.52	3.69	3.93	1.09	2.81
37457		2.62	3.96	4.14	1.3	3.01
34823-2		2.4	4.2	4.97	1.23	3.20
35427-1		2.35	3.99	4.34	1.02	2.93
Rasina		2.32	3.98	4.13	1.02	2.86
Timok		2.43	4.26	4.73	1.16	3.15
Volga		2.51	4.01	4.2	1.51	3.06

Table 7: 2016 Dry matter yields, t/ha

2016	Site	Loxton	Minnipa	Morchar	Piednippie	State Ave
<b>Line</b>						
34559		1.11	2.95	1.90	1.91	1.97
34748		1.16	3.37	2.09	2.02	2.16
34822		1.15	3.40	2.19	2.19	2.24
34831		1.07	3.69	1.89	1.86	2.13
34842		1.18	3.77	1.83	2.11	2.22
34876		1.05	3.48	2.12	2.09	2.19
34883		1.38	2.99	2.03	1.98	2.10
34885		1.21	3.17	2.13	2.01	2.13
35019		0.92	3.02	1.93	1.58	1.86
35036		1.10	3.12	1.92	1.84	1.99
35122		1.28	3.17	2.16	2.14	2.19
37003		1.10	3.21	1.69	1.72	1.93
37058		0.96	3.57	2.16	2.22	2.23
37107		1.11	3.21	1.90	1.84	2.01
37457		1.33	3.19	1.94	1.87	2.08
34823-2		1.30	3.18	2.08	1.96	2.13
35427-1		1.06	3.16	1.73	1.83	1.94
Rasina		1.17	3.69	1.81	2.16	2.21
Timok		1.12	3.57	1.80	1.85	2.08
Volga		1.40	3.34	2.58	2.49	2.45

Table 8. Grain yields, t/ha

Site	2014 Kingsford	2015 Kingsford	2015 Morchard	2016 Kingsford	2016 Morchard	3 yr mean
<b>Line</b>						
33258	1.65					
34559	2.80	1.93	1.82	2.75	2.58	2.38
34742	2.74					
34748	3.00	2.26	2.13	3.3	3.18	2.77
34822	3.06	2.14	2.24	3.59	3.44	2.89
34823-2	3.00	2.13	2.14	3.74	3.06	2.81
34831	3.00	2.46	2.47	3.7	3.15	2.96
34842	2.90	2.36	2.12	3.92	3.33	2.93
34876	3.03	2.19	2.04	2.86	3.25	2.67
34883	2.65	2.32	2.30	3.26	3.57	2.82
34885	2.62	2.22	2.13	3.67	2.02	2.53
34895	3.10					
35004	2.81					
35019	1.37	2.15	1.92	3.5	2.92	2.37
35036	2.66	1.86	1.76	3.67	3.06	2.60
35054	2.62					
35061	2.34					
35122	2.85	2.08	2.13	3.03	3.18	2.65
37003	2.81	1.92	1.94	3.54	2.7	2.58
37058	2.69	1.91	2.25	3.39	3.32	2.71
37107	2.91	2.03	1.98	3.62	3.32	2.77
37248	2.25					
37457		2.44	2.05	3.68	3.34	2.88
35427-1		2.15	2.22	3.52	3.61	2.88
Rasina		1.90	2.12	3.39	2.76	2.54
Timok	2.69	2.24	2.33	3.66	2.87	2.76
Volga	2.93	2.00	2.20	3.98	3.23	2.87

Table 9. Feedtest fodder analysis first cut (Sept 3)

Line	Product	Dry Matter	Moisture	Crude Protein	Acid Detergent Fibre	Neutral Detergent Fibre	Digestibility (DMD)	Digestibility (DOMD) (Calculated)	Est. Metabolisable Energy (Calculated)	Water Soluble Carbohydrates
		%	%	% of dry matter	% of dry matter	% of dry matter	% of dry matter	% of dry matter	MJ/kg DM	% of dry matter
34748	Hay	89.3	10.7	21.2	29	37.6	73.1	69.7	11	10.4
34876	Hay	90.4	9.6	23.7	26.2	38.4	71.3	67.2	10.6	6.4
37107	Hay	90	10	25.7	28.2	38.5	71.4	67.3	10.7	4.4
Rasina	Hay	91.2	8.8	25.1	28.5	41.3	63.7	60.8	9.3	5.2
Timok	Hay	89.9	10.1	24.9	29	39.9	67.8	64.5	10	6
Volga	Hay	90.8	9.2	25.1	26.5	39.5	68.8	65.1	10.2	5

Table 10. Feedtest fodder analysis 2<sup>nd</sup> cut (Oct 15)

Line	Planting	Product	Dry Matter	Moisture	Crude Protein	Acid Detergent Fibre	Neutral Detergent Fibre	Digestibility (DMD)	Digestibility (DOMD) (Calculated)	Est. Metabolisable Energy (Calculated)	Water Soluble Carbohydrates
			%	%	% of dry matter	% of dry matter	% of dry matter	% of dry matter	% of dry matter	MJ/kg DM	% of dry matter
34876	2	Hay	91	9	13.3	30.2	47.4	57.8	55.0	8.3	6.3
37107	2	Hay	90.5	9.5	15.9	28.2	43.7	65.5	60.6	9.3	7.2
Rasina	2	Hay	90.6	9.4	16.1	28.7	45.2	58.6	56.5	8.5	5
Timok	2	Hay	90.3	9.7	13.4	31.3	46.5	59.5	57.2	8.6	5.4
Volga	2	Hay	90.7	9.3	13.6	27.9	44.3	58.4	56.3	8.4	8

**Appendix B.**



**Photo 1: Morchard, July 23 2015, SA 34876 centre front row**



**Photo 2: Minnipa, July 22 2015, SA 34876 Middle 2<sup>nd</sup> row**





**Photo 3: Field day discussing vetch at Ceduna, August 2016**



**Photo 4: Piednippie 2016, white flowered line in the centre is SA 34876**





**Photo 5: Morchard August 2016, dark area on right is the location of 2015 vetch trial in following cereal crop**



**Photo 6: Morchard 14 July 2017, two central plots are SA 34876 growing through a very frosty period of winter, outperforming other varieties in the foreground and alongside.**



**Photo 7: Field day discussing SAGIT vetch trials at Morchard, September 2015**