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Project Code	
Project Type	

## FINAL REPORT 2018

**PROJECT CODE** : S1417

### PROJECT TITLE

Common Vetch as a break crop for marginal cropping systems.

### PROJECT DURATION

Project Start date	1 July 2017				
Project End date	30 June 2018				
SAGIT Funding Request	2015/16		2016/17		2017/18

### PROJECT SUPERVISOR CONTACT DETAILS

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## PROJECT REPORT

### Executive Summary

This project was conducted to finalise PBR registration of a new variety of common vetch targeting the lower rainfall cropping areas of South Australia, and conduct the process associated with the commercialisation of this variety.

There were also 3 varietal comparison/demonstration trials sown in South Australia to promote the work (at Minnipa, Morchard and Waikerie) see results in Appendix A.

- The new variety "Studenica" has been granted PBR protection
- It will be released in conjunction with SARDI, GRDC and SAGIT
- The commercialisation process has been conducted and the successful partner will be Pasture Genetics, a South Australian owned and run seed company (this is commercially confidential until final agreements are signed)
- Seed multiplication is ongoing in 2018, with the aim of providing the commercial partner with significant quantities of seed for final multiplication in 2019 for a full release in 2020

### Project Objectives

The objectives of the previous project (S914) are listed below, these were achieved. This project has the same over-riding objectives, as it is an extension of the last project, and is aimed at finalising the registration and release of the variety selected from the project S914.

- 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.

The direct objectives of this project were to:

- Finalise PBR registration of SA 34876 (commenced in S914);
- Multiply breeders seed for transfer to a commercial partner;
- Select a commercial partner for this release (in consultation with SAGIT, GRDC and SARDI);
- Run limited variety trials in targeted areas to demonstrate the new variety and keep it "front of mind" for those who have followed this project and believe in the importance of a variety with these attributes;
- Promote the work done in project S914 and the variety to be released from this project wherever possible (field days, crop walks and research articles).

### **Overall Performance**

All KPI's proposed for this project were achieved.

PBR registration was completed on the selected line (SA 34876) it is now the registered variety "Studenica"

Variety trials/demonstrations were successfully conducted at all sites, with satisfactory results produced from all sites (see Appendix A for results), field days were held at both Morchard and Waikerie to demonstrate and discuss the findings of this project and S914

Multiplication of pure seed was conducted at 2 sites resulting in production of 75kg of Breeders seed.

An open tender process was conducted to select a commercial partner for the selected variety, resulting in the selection of Pasture Genetics as the preferred partner.

The work done in this project and the previous project S914 was discussed and presented at field days and crop walks throughout South Australia in 2017. This included field days at Hart, Booleroo Centre, Farrell Flat, Waikerie, Morchard and Geranium.

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

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

<b>Key Performance Indicators (KPI)</b>		
<b>KPI</b>	<b>Achieved (Y/N)</b>	<b>If not achieved, please state reason.</b>
<p><b>1. Conduct variety demonstrations/trials in selected locations.</b></p> <p>Trials were sown at 3 sites for demonstration and assessment, Minnipa, Morchard and Waikerie. The Minnipa trial was not cut for hay as it was to be used for observations at the MAC field day.</p> <p>The other 2 sites were cut for hay (see Table 1, Appendix A). The Waikerie site was cut early, 20th August, to demonstrate the benefit the line SA 34876 can gain from its early vigour and winter growth, SA 34876 produced more than 1 t/ha more dry matter at this time than Morava.</p> <p>Morchard was cut at a more traditional time to enable several crop walks by local farmers. Results reflected that the later lines had similar yields due to the longer growing time. The trial did demonstrate Studenica's superior winter growth in observations taken in July and August (see Figures 1 and 2, Appendix A)</p> <p>All trials were considered successful as they gathered considerable interest and were discussed with farmers, agronomists and seed company reps.</p>	Yes	
<p><b>2. Complete PBR registration of new variety (SA 34876), including collation of the variety technical dossier</b></p> <p>PBR registration has been completed, and the technical dossier produced for use in the commercialisation process.</p>	Yes	
<p><b>3. Multiply and clean Breeders Seed of new variety</b></p> <p>Pure seed was successfully multiplied at 2 sites, cleaning, grading and final weighing of the Breeders seed showed 75kg of breeders' seed was produced in 2017.</p>	Yes	

<p>Due to delays in the commercialisation process the Vetch Breeding Program has re-sown 60kg of this seed for multiplication in 2018 to provide to the commercial partner for further multiplication in 2019.</p>		
<p><b>4. Select a commercial partner for the release of the new variety</b></p> <p>The technical dossier was finalised in February and the commercialisation process conducted. Delays in the process resulted in the tenders not being finalised until August 2018, meaning the successful tenderer (Pasture Genetics) was not able to multiply seed in 2018 (see KPI 3)</p>	<p>Yes</p>	
<p><b>5. Produce final report</b></p> <p>The final report has been produced.</p>	<p>Yes</p>	
<p><b>Technical Information</b></p>		
<p>Three varietal demonstration trials were conducted at Minnipa, Morchard and Waikerie, there was also a comparative grazing/fodder production demonstration on a large scale using Studenica conducted at Booleroo by the Upper North Farming Systems group. These trials were all used to discuss the project with farmers and significant interest was shown in the potential of Studenica as a legume option in the lower rainfall and cold winter environments where it was trialled.</p>		
<p>The Waikerie Trial was cut earlier (20 August) than is traditional to demonstrate the value of early vigour and winter growth. The results showed Studenica had over 1t/ha more dry matter at this time than Morava. For full results see Table 1, Appendix A.</p>		
<p>The Minnipa trial was not cut for hay as it was used as demonstration strips later in the season. Grain yields were not analyzed from this site as low spring rainfall and poor growth made harvest difficult and results not analyzable.</p>		
<p>For all trial results that have led to the release of the new variety Studenica, please refer to the Final Report of Project S914.</p>		
<p>The finalization of PBR registration was completed and accepted by IP Australia. The technical dossier for Studenica was also completed.</p>		
<p>Pure seed build up (breeders' seed) was conducted at two sites, resulting in the production of 75kg of breeders seed. 60kg of this seed has been re-sown in 2018, with the aim of producing a minimum of 1t of pure seed, to push forward commercial release of the variety to 2020.</p>		

The open tender process for the commercialization of the variety Studenica was commenced in January, in conjunction with SARDI, GRDC and SAGIT, delays in the process have meant it was not finalized until August. The successful tenderer will be "Pasture Genetics" a 100% South Australian owned and run company with a good track record of commercializing varieties from SARDI including vetch.

#### **Conclusions Reached &/or Discoveries Made**

The line trialled as SA 34876 has been selected to be released as a new common vetch variety "Studenica" targeted at low rainfall mixed farming systems in South Australia.

PBR registration has been granted and the commercialization process conducted, resulting in Pasture Genetics being selected as the commercial partner for this release.

Seed multiplication was conducted in 2017 resulting in 75kg of pure seed, this has been res-own by the Vetch Breeding Program in 2018 as the tender process was delayed. Meaning the successful tenderer was unable to get the seed in the ground this year. The aim is to provide Pasture Genetics with at least 1.0t of seed in January 2019.

#### **Intellectual Property**

No intellectual property was created in this project.

The background IP, vetch breeding lines for assessment, were created in previous GRDC and SARDI funded projects.

GRDC, SARDI and SAGIT have reached agreement on the split of any royalties created by the release a variety from this project, this reflects SAGIT's contribution in the trialing and promotion of the material used in this project.

The agreed royalty split is;

GRDC - 37.48%

SARDI - 55.93%

SAGIT - 6.59%

Pasture Genetics has agreed to pay a 5% royalty on all seed sales of the variety "Studenica".

#### **Application / Communication of Results**

- A new common vetch variety "Studenica" providing low rainfall mixed farming systems in South Australia with a genuine versatile legume option in their rotations, will be released base on work in this project.
- It will be commercialized in partnership with Pasture Genetics (this information is still commercial in confidence and therefore should not be released to the press, until final documentation is signed off)

This new variety has the potential to spread vetch production in to more marginal cropping areas offering mixed farmers an alternative to medic based pastures as their legume in the rotation. Studenica will offer high production potential, better winter growth and more versatility in the rotation than other legumes in these areas, particularly the grazing legumes which require extensive management year on year. It has the potential to offer these farmers a high nitrogen fixing legume option in their rotations reducing risk in the cropping system and increasing profitability across the farm.

The path to market for this variety has been approved in discussions between SARDI, GRDC and SAGIT. It was commercialized through an open tender process. The successful bidder, Pasture Genotics, has a proven track record when it comes to commercializing and promoting new varieties of both crop and pasture legumes.

The biggest barrier to adoption of this variety is poor seed multiplication or delays in the commercialization process. This could delay full commercial release and slow adoption of the variety. Significant interest has been shown in this variety by farmers at every trial site and field day conducted demonstrating the benefits that this variety can offer. It is important to continue this momentum.

As mentioned there were a range of field days, crop walks and seminars held in 2017 promoting this work, this included field days at Hart, Booleroo Centre, Farrell Flat, Waikerie, Morchard and Geranium.

Due to personal circumstances I have been unable to publish any articles from this project in 2018. A full list of articles and reports published on this research can be found in the final report of project S914.

## **POSSIBLE FUTURE WORK**

This work and the variety resulting from it will require further promotion and demonstration to reach its full potential. However, the Vetch breeding program has not sought further funding for this, as this work will be ongoing in GRDC projects and all SARDI field days and trials.

<b>AUTHORISATION</b>	
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Position:	Acting Research Chief, Sustainable Systems
Signature:	
Date:	22 August 2018



## Appendix A

Table 1. 2017 mean dry matter results

Experiment	Genotype	t/ha Hay
Waikerie Hay#	SA 34876	4.81
Waikerie Hay#	Morava	3.69
Waikerie Hay#	Rasina	3.96
Waikerie Hay#	Timok	3.75
Waikerie Hay#	Volga	4.21
Morchard hay*	SA 34876	3.43
Morchard hay*	Morava	2.53
Morchard hay*	Rasina	3.42
Morchard hay*	Timok	3.25
Morchard hay*	Volga	3.29

# The Waikerie trial was cut 20<sup>th</sup> August to demonstrate the benefits of the early vigour and winter growth of SA 34876

\*The Morchard trial was cut at a more traditional time 1 month later.

For further results, please see the final report of project S914



Figure 1: 2017 Morchard trial with Studenica in the centre of the picture (2 plots of bright green growth) and 2 plots at the top of the picture.

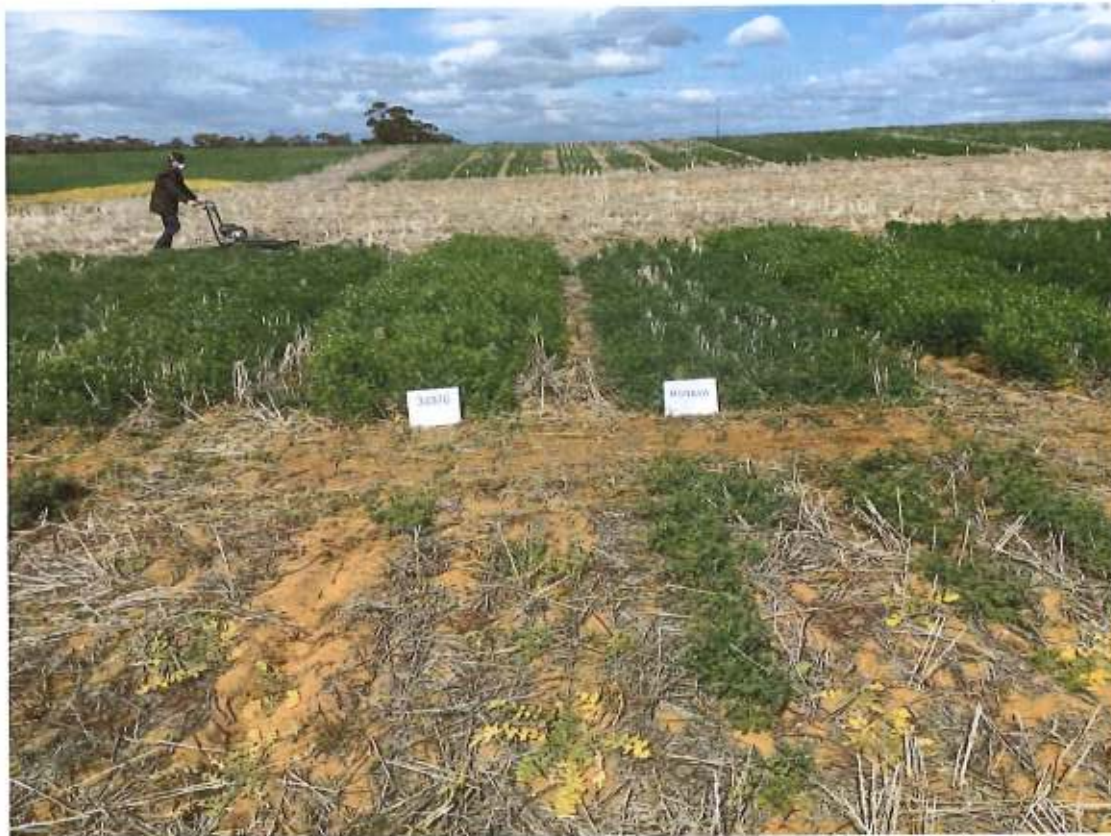


Figure 2: Studenica labelled 34876 on left, Morava on the right at Waikerie 9 August 2017