Timok Vetch

Vicia Sativa

- New release from SARDI Vetch Breeding Program.
- Matures between Rasina and Morava (from seeding to full flowering 100 - 110 days).
- High yielding and rust resistant but is only moderately resistant to Ascochyta Blight.
- Very good vigour at flowering.
- Timok is ideally suited to grain production in areas with > 380mm rainfall/yr.
- Timok’s dry matter is similar to Morava in high rainfall (> 400mm), but 19% higher than Morava in low to medium rainfall regions (330 - 380mm).
- Multipurpose variety – can be used for grain, hay/silage, grazing or green/brown manure.

Seed agronomy table

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
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<tbody>
<tr>
<td>Maturity</td>
<td>100 - 110 days</td>
</tr>
<tr>
<td>Pod Shatter</td>
<td>0 - 2%</td>
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<tr>
<td>Flower Colour</td>
<td>Purple</td>
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<tr>
<td>Min Rainfall (mm)</td>
<td>350</td>
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<tr>
<td>Hard Seededness</td>
<td>Soft</td>
</tr>
<tr>
<td>Seeding Rate</td>
<td>Kg/Ha</td>
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<tr>
<td>Dryland Pure</td>
<td>30 - 45</td>
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</tbody>
</table>
Enterprises this seed is being used for

Sheep
Beef Cattle
Dairy Cattle
Hay & Silage
Viti & Horti

Summary of Main Traits

- High yielding, highly rust resistant common vetch variety.
- Moderately resistant to Ascochyta Blight.
- Susceptible to Botrytis.
- Good early establishment.
- Maturity between Rasina and Morava (100-105 days from seeding to full flowering).
- Best adaption for grain production in rainfall areas >380mm/yr.
- Dry matter production is similar to Morava in high rainfall regions (>400mm) but 19% higher than Morava in low to medium rainfall regions (330-380mm).

Breeding & Disease Testing History

Timok was bred by Australian National Vetch Breeding Program led by Rade Matic and assisted by Stuart Nagel and Gregg Kirby. Timok was bred by conventional plant breeding methods from a cross made in 2000 between ATC 60394 (“Blanchefleur”) and ATCa landrace introduction. The selection was backcrossed to ATC 60217 again in 2002 to achieve the main targeted traits.

Timok was tested for rust resistance by Joop vanLeur from NSW Department of Primary Industry, Tamworth, NSW, and Diego Rubialis from Institute of Sustainable Agriculture, CSIC (Consejo Superior de Investigaciones Científicas), Cordoba, Spain. Results for Ascochyta and Botrytis are done by J. Davidson, SARDI’s plant pathologist and vetch breeding group in 2010 and 2011. See in Appendix 7.
Main Advantages

Timok was bred to complement Morava in mid/high rainfall areas for grain/seed and especially for hay/silage production. Timok yielded more grain than Rasina, Morava and Blanchefleur by 9%, 18% and 21%, respectively over five years at five sites in SA. Data interstate trails presented in Appendix 5.

Timok has better initial establishment than Morava, is rust resistant, mid flowering and maturing. It will improve the reliability of vetch and economic production in crop rotations especially in mid and high rainfall areas, 350-450mm/yr. Morava will still be the preferable variety for hay/silage in rainfall areas with greater than 450mm per year.

Toxin levels in the grain are around 0.57%, lower than any current variety. (Toxin level measured by Diffuse Reflectance Infrared Spectra, by M. Tate). Seed weight per 100 seeds is: Timok 6.88g, Morava 7.82g, Rasina 6.92g and Blanchefleur 6.21g. Timok size is similar to Rasina.

Yields & Adaptation

Timok has high grain and herbage yields and is well adapted to all areas of Australia where vetch is currently grown. It can be successfully grown in many Australian soil types; from non-wetting sand to heavy clay loam with pH 5.8 – 9.4, like other common vetch varieties. Timok is moderately resistant to Ascochyta Blight whereas Morava is susceptible. Timok is susceptible to Botrytis. Timok yielded 9% more grain than Rasina and in low rainfall areas (Blyth & Lameroo) yielded 19% more dry matter over five years at five sites.

Agronomic Management

Agronomic characteristics
Paddock selection and basic requirements for growing Timok are similar to other common vetch varieties. Good control of weeds in early growth stages is very crucial, as it is for other vetch varieties. Vetches are poor competitors to weeds in early growth stages, but when vetch has 15 nodes it is competitive with broadleaf and grassy weeds.

Sowing time and rates
Generally the recommended sowing time for southern Australia is from mid April to the mid June for the best performance of this variety. Sowing rates are related to the end use targeted and rainfall areas. Higher rates are required for hay/silage, grazing and green manure and lower rates are used for grain/seed production. See Appendix 6.

Harvesting
For grain/seed, dry matter, grazing and green manure there are no differences between
Timok and other common vetch varieties.

**Dry matter**
Cut when there are 50% flowers and 50% small pods for the best combination of yield and feeding value for hay/silage.

**Grazing**
Graze from 10 nodes (20-25cm high) through to grain harvest time.

**Green manure**
Turn into soil or desiccate at flowering time.

**Herbicide tolerance**
Timok was not sensitive to any herbicides recommended/registered for use in common vetch and applied according to label directions. Chemicals generally used in the production of common vetch are;

- Trifluralin pre planting incorporated in to the soil.
- Diuron post-plant pre emergence for broadleaf weed control.
- Metribuzine post-plant pre emergence for broadleaf and some grass weeds.
- Cyanazine (Bladex) post plant pre emergence for broadleaf and some grassy weeds.
- Experience has shown that diuron, metribuzine and cyanazine are much safer for the crop in the post plant pre emergence stage rather than in post emergence stages.

**Insect pests**
Timok is susceptible in early growth stages to red legged earth mite and lucerne flea, like other common vetch varieties. Timok is also susceptible to bluegreen and cowpea aphids from early growth through to pod maturity, as well as to native budworm during pod formation and filling.

**Frost tolerance**
Frost tolerance testing was conducted in Serbia for two years. Frost occurred for five consecutive days at -1°C resulting in the following seedling survival rates: Timok 82%, Morava 66% and Rasina 72%.

Disease resistance, Feed value, Toxin in grain and Seed weights. See Appendix 7.

**Variety Protection & Royalties**
The GRDC, RIRDC and SARDI have existing intellectual property (IP) in the germplasm.
developed by the Australian National Vetch Breeding Program. Varieties developed in this program will have PBR to protect the investment of all stakeholders. Equity is split on the basis of inputs from each party for royalty inputs for variety.

**Marketing**

Timok vetch can be used for stock feed as grain, hay or silage for all ruminants.

Grain can be used in a ration for pig feed up to 20% of the diet. Timok can be recommended as a pure pasture or in cereal mix, both green and dry for grazing stock. It can be used in a crop rotation to increase organic matter in the soil and put nitrogen back into the soil by nodulation.

**Acknowledgement**

The NVBP wishes to express our sincere gratitude and appreciation to the GRDC, RIRDC and SARDI for long term investment in vetch breeding. We would like to thank our farmers for providing their land for our experiments and sharing their suggestions and expectations for improved varieties/characteristics. Also, thanks to all our collaborators in Australia and overseas for assessing and providing germplasm for our program.

**Appendicies**

**Appendix 1:** 2008-2012 Long-term grain yield of vetch varieties (5 sites x 5yrs). Yield expressed as % of Rasina yield.
**Appendix 2:** 2008-2012 Vetch grain yields in low and high rainfall areas.
**Appendix 3:** 2008-2012 Long-term dry matter production of vetch varieties (5 sites x 5yrs). Yield expressed as % of Morava’s yield.
**Appendix 4:** 2008-2012 Long term dry matter production of vetch varieties in low to high rainfall areas.
**Appendix 5:** Interstate vetch grain results for 2011 & 2012.
**Appendix 6:** Agronomic traits and recommendations for vetch varieties, production & end-use.
**Appendix 7:** Disease resistance, Feed value, toxin in grain and Seed size.