

UNFS UPDATE



Upper North Farming Systems Newsletter

November 2015

Harvest Rain - What does it mean?

Prepared by Matt McCallum with input from UNFS Management

PRE- HARVEST SPROUTING

The Upper North has received 50-100mm in the last two days, which is not good. However, if we now have some reasonable drying weather (sunny, windy), the damage is likely to be minimal on cereals. A drop in test weight and grain discolouration usually occurs after a significant rainfall event, which could cause downgrading.

In terms of sprouting, most wheat crops will handle one major rainfall event without causing detrimental damage during harvest, but it is the second and maybe third rainfall events that usually cause us grief. Coastal areas that receive continual moist conditions after rainfall are most at risk from pre-harvest sprouting.

Below is a table from Bates Agricultural Consulting (Streaky Bay, EP) containing data from a farmer who had significant rain during the 2008 harvest on EP. The rainfall events were approximately 10 days apart.

| Variety | 1st rain mm | 2nd rain mm | Falling number | Germination |
|-------------|-------------|-------------|----------------|-------------|
| Wyalkatchem | 0 | 0 | na | 98 |
| Wyalkatchem | 40 | 30 | 200 | 72 |
| Yitpi | 0 | 0 | na | 98 |
| Yitpi | 40 | 35 | 290 | 82 |
| Correll | 40 | 10 | 140 | 69 |
| Gladius | 40 | 28 | 110 | 58 |

Of the current varieties, we know that Mace and Scout are reasonably tolerant to harvest sprouting.

More intolerant varieties include Kord CL, Axe and possibly Emu Rock.

| Variety | Sprouting | Black point |
|-------------|-----------|-------------|
| Axe | I/VI | S |
| Corack | MI | MS/S |
| Emu Rock | I? | MS |
| Grenade CL | MI/I | MS |
| Kord CL | I | MR |
| Mace | MI/I | MS |
| Scout | MI | S |
| Scepter | MI/I | MS |
| Trojan | MI | MR/MS |
| Wyalkatchem | I | MS |

Source: SARDI Sowing Guide 2015



Sprouting Grain. Image: www.grdc.com.au

Harvest Rain - What does it mean? Cont...

Retaining Seed for the 2016 Season

What about keeping seed? If you harvest your wheat after one major rainfall event at 12% moisture (or below), your seed should be okay to keep. If you are in doubt, you can get your tested by Seed Services Australia. Ph 1300 364 322. Email seeds@ruralsolutions.sa.gov.au. Send clearly marked samples (along with contact and trading details) of **1kg seed** to,

Seed Services Australia

GPO Box 1671

Adelaide SA 5001

One thing to remember after rain is **do not keep high moisture grain for seed**. Most farmers do this once in their career, but never do it again.

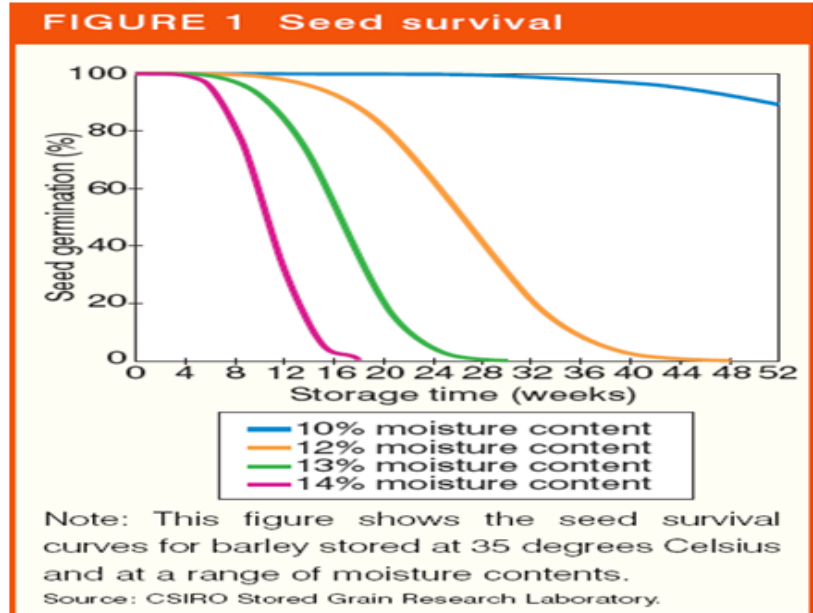


Image Source: Kondinin Farming Ahead Magazine

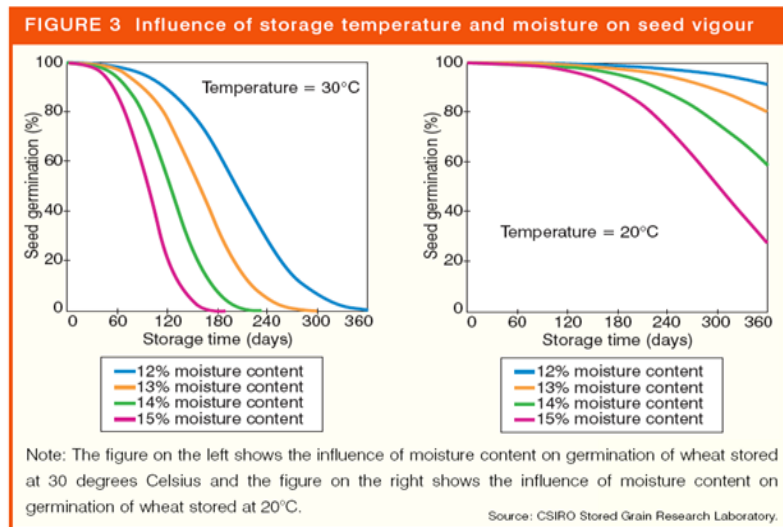


Image Source: Kondinin Farming Ahead Magazine

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Harvest Rain - What does it mean? Cont...

Summer Weeds - Start planning for their control now.

One positive with the rain is that there is the opportunity to store some moisture for next years crops, where rainfall had a chance to soak in rather than run off. Most farmers will be keen to get back on the harvester as soon as possible, but don't forget about early summer weed control. Weeds like fleabane are becoming an issue, and need to be controlled early at the seedling stage. Research in SA has proven that effective fleabane control can result in significant soil moisture (20-70mm) being retained for following crops.

Fleabane has a natural tolerance to the uptake of herbicides due to fine, dense hairs on the leaf surface and a thick cuticle (leaf surface). When treated, young (one month old or less) susceptible flaxleaf fleabane plants can be controlled with glyphosate mixtures. When mature however, the weed can be very difficult to control with glyphosate, regardless of its resistance status.



Image 1 (Left): Fleabane cotyledons are hairless, spear-shaped, and bluish-green in colour



Image 2 (Right): First seedling leaves almost round and hairy. Later leaves oval with toothed margins

Image 3 (Below): Mature plants are hairy, often branched at the base and up to 70 cm high. You will not effectively control fleabane with herbicides at this stage.



PHOTOS: More Crop Weeds,
Moekerk and Barnett 1998

Control Summer Weeds like Fleabane in Winter and Spring

This entry was posted in [Bulletin Board](#) on [September 18, 2015](#) by [Cindy Benjamin](#). – [WeedSmart](#)

There is mounting evidence for the value of managing summer weeds like fleabane and feathertop Rhodes grass during the winter crop phase.

Richard Daniel, Northern Grower Alliance (NGA) CEO says results improve dramatically when growers stop targeting large plants in the summer fallow as the primary management timing for these weeds.



Northern Grower Alliance CEO Richard Daniel says that managing fleabane and feathertop Rhodes grass (FRT) in-crop or immediately after harvest is more effective than later in the summer when the plants are large and moisture-stressed (Photo courtesy of GRDC).

“Fleabane plants growing in the summer fallow are generally more difficult to kill as they are often large, moisture-stressed and frequently resistant to glyphosate,” he says. “Targetting fleabane populations pre-plant, in-crop or immediately post-harvest in the winter cropping phase is usually far more effective.”

Crop competition, and particularly avoiding wide row cropping, considerably suppresses fleabane growth. If wide row cropping is required then an emphasis must be placed on effective residual herbicides.

Although many populations of fleabane are resistant to glyphosate, fleabane is sensitive to quite a wide range of residual chemistry. Applying residuals pre-plant combined with crop competition will minimise establishment in-crop and reduce the initial summer fallow weed pressure.

“It is important to realise that fleabane can still survive at very small growth stages under a competitive crop and is easily overlooked,” says Mr Daniel. “Once the crop is removed, these plants develop very quickly and the opportunity for effective control can be missed if the in-crop escapes go un-noticed.”

“The effectiveness of a double-knock treatment at any stage in the summer fallow is improved by using 2,4-D or picloram + 2,4-D with glyphosate in the first spray rather than glyphosate alone, followed by paraquat 7 to 10 days later,” says Mr Daniel.

Several crops are sensitive to the residual effects of picloram so the planned rotation must be taken into account when making product choices.

Continuing Story....

Cultivation may be the most economic and effective strategy to kill large, stressed plants growing in fallow, however growers must also prepare and implement strategies to manage the next flush of fleabane emergence.

Mr Daniel says there are several knock-down and residual herbicides that growers can use to target small and actively growing fleabane before, during and immediately after the winter cropping program or in a winter fallow.



Fleabane thrives where there is no crop competition and small plants can easily go unnoticed late in the winter crop. (Photo: Anthony Mitchell, NGA)

Another weed that has been very difficult to manage in a summer fallow is feathertop Rhodes grass (FTR). In paddocks with a feathertop Rhodes grass problem, sorghum is generally not the best crop choice because there are no effective post emergent control options and available residual chemistry will not provide season-long suppression. Crops that allow selective in-crop grass control, such as mungbeans or even sunflowers, can provide more management flexibility.

“Like the fleabane situation, there are also opportunities to commence feathertop Rhodes grass management late in winter or during spring,” he says. “Intensive patch management of feathertop Rhodes grass is also an effective strategy as feathertop Rhodes grass is generally found in well-defined patches in the first few years of colonisation.”

For small patches or new incursions, chipping, pulling, spot spraying or cultivation can be used. Burning, followed by cultivation and or the use of residual herbicides, appears to be a salvage strategy for removing mature plants. Although not an option for common sowthistle, time spent trying to eliminate small patches of feathertop Rhodes grass will be cost-effective in the long run.

The in-crop options for feathertop Rhodes grass in winter crops are not extensive and, like fleabane, feathertop Rhodes grass is generally one of the key weeds that survives in fallows where glyphosate is the dominant herbicide.

Mr Daniel recommends using residual chemistry wherever possible and controlling ‘escapes’ with camera spray technology. “A double-knock of Verdict® followed by paraquat can be used in Queensland, but only under permit prior to planting mungbeans where large spring flushes of feathertop Rhodes grass occur,” he says.

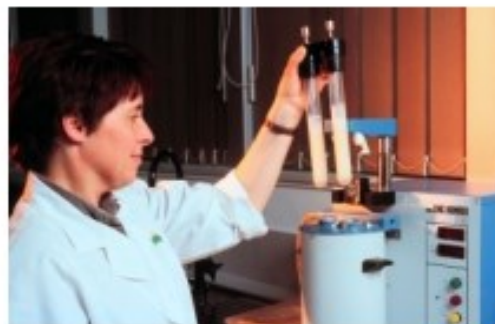


WHAT DOES A “FALLING NUMBER” TEST MEAN?

When it rains just before harvest, grain may start to germinate (or sprout) in the head. The germination causes an increase in α -amylase (alpha-amylase), an enzyme that breaks down starch, and there are also increases in enzymes that break down proteins. Of these, the starch degrading enzyme, α -amylase has a greater effect on reducing the quality of flour, and of products made from the flour. The longer the grain sprouts, the greater the amount of α -amylase formed. If badly sprouted grain is milled, the flour can cause product problems such as sticky, doughy bread which won't slice in mechanical slicers, or noodles which are too stretchy, and slip from the wooden rods where they are draped to dry.

To some extent, estimating the degree of germination by eye gives an idea of how much α -amylase is present, but this is an imprecise way of measuring it, so a test called the “Falling number” method is used to measure the effect of the α -amylase accurately.

In the falling number method, an instrument, which measures the time taken for a plunger to fall to the bottom of a precision bore glass tube filled with a heated paste of wheatmeal and water, is used. The time taken (in seconds) for this to happen is known as the **falling number**, and is 62 seconds for badly sprouted wheat. Of this, it takes 62 seconds to mix the wheat meal and water,



but then the plunger falls immediately to the bottom because the mixture is so thin. High quality wheat gives a thicker paste, and the test then takes between 300-600 seconds. The greater the sprout damage, the less viscous (or sticky) the starch paste, and so the lower the falling number. Wheats with falling numbers greater than 300 are quite suitable for breadmaking - this is one of the specifications for Australian Prime Hard wheat. For other milling grades, falling numbers greater than 250 are acceptable.

Quality Wheat CRC Ltd. has released WheatRite®, a simple kit which can be used by growers to measure rain damage before harvest, so pockets of badly damaged wheat can



be avoided and premium wheat is not downgraded. The test takes only 5 minutes and results, which can be read by eye, correlate well with Falling Number. An electronic reader, ReadRite, has also been developed for silo use. Articles have appeared in *Farming Ahead*, *Australian Grain* and *Groundcover*. WheatRite® is distributed by Graintec, ph. 07 4638 1761.

Sprout damage can also be measured by the Australian-designed and -built RVA (Rapid Viscosity analyser). This method is faster than the falling number method and involves stirring a heated paste of wheatmeal and water with a motor driven paddle in a disposable aluminium can for a period of 3 minutes. The Stirring Number is a measure of the drag on the paddle or viscosity of the heated wheatmeal paste and is highly correlated with measurements of the Falling Number. However, the Falling Number method is currently the international standard.



WHY DOES A BIT OF RAIN AT HARVEST CAUSE GRAIN TO LOSE WEIGHT?

As described under the heading falling number, grain can start to germinate in the head if it rains just before harvest. Although the grain may not be fully sprouted, after wetting it swells, and doesn't return to its previous size on drying out. This means the same weight of grain now fills a larger space, or, to put it another way, the same volume of grain weighs less.

Test or Hectolitre weight (the weight of 100 litres of grain) is used to assess the specific volume. Hectolitre weights of sound grain usually range between 76 and 84 kg per hectolitre, whereas weather damaged grain can fall as low as 60 kg per hectolitre.

contact details

Quality Wheat CRC Ltd.
 Locked Bag No. 1345, P.O. North Ryde NSW 1670
 Phone 02 9490 8488 Fax 02 9490 8503
 Web page <http://www.wheat-research.com.au>



NOT ALL BAD: PROMOTING BENEFICIAL INSECTS

Southern Region

July 2015

While many growers think of insects as pests that can cause havoc in crops, the majority of insect species are benign or beneficial. Integrated management, rather than relying on insecticides, can promote the growth of these species to help control pest insects.

Beneficial insects also have other advantages in cropping such as nutrient cycling and pollination.



Dr Paul Umina from cesar and The University of Melbourne says that a number of beneficial insects are active at present in south-eastern Australia.

“Red velvet mites and other predatory mites will be increasing in number after the initial surge of pest numbers we had with this season’s break, and terrestrial flatworms have been spotted, which might be impacting on slug numbers,” he said. “Red velvet mites are recognisable by their bright red colour and velvety appearance.”

Some beneficial organisms are bred and applied or released in the field to counter upsurges in pest populations. But there are also many naturally occurring beneficial species that help keep pest populations under control.

There are many beneficial insects in southern cropping systems, which can help control a range of crop pests (see table 1).

Table 1: Examples of common beneficial insects and crop pests they can help control.

| Beneficial Insect | Crop Pest |
|-------------------|--------------------------------------|
| Predatory Mites | Earth Mites, Lucerne Flea |
| Carabid Beetles | Slugs, earwigs |
| Hoverflies | Aphids |
| Parasitic Wasp | Aphids, Heliothis, Diamond Back Moth |
| Lacewings | Aphids, Thrips, Mites |
| Ladybird Beetles | Aphids, Diamond Back Moth |

“It is important to understand the difference between pest and beneficial insects so good species can be encouraged and predate on the pests, rather than using insecticides, which indiscriminately kill both pests and beneficial insects,” Dr Umina said.

Promoting Beneficial Insects

Beneficial insects are generally more susceptible to insecticides than pests, so Dr Umina recommends monitoring both pest and beneficial insect populations before making a decision to spray. Beneficial insects may help keep pest numbers below a threshold where spraying is required

Beneficial insects are generally more susceptible to insecticides than pests, so Dr Umina recommends monitoring both pest and beneficial insect populations before making a decision to spray. Beneficial insects may help keep pest numbers below a threshold where spraying is required

It is important to realise there is often a lag time between the growth of pest populations and increases in abundance of their natural enemies. If pest populations are growing relatively slowly and monitoring detects beneficial insect activity, it is often advisable to hold off spraying and allow the beneficial insects an opportunity to suppress pest populations, he said.

If chemicals are needed, growers should consider using insecticides that are specific to the pest and less harmful to non-target species, including beneficials.

Another strategy that encourages beneficials is native vegetation shelterbelts or refuges. A GRDC funded project “Pest Suppressive Landscapes” has found that native vegetation is more likely to support beneficial insects, while weeds are a key habitat for pests. Generally, native vegetation remnants in the landscape mean that crop paddocks are in a better position to suppress pests throughout the season by encouraging beneficial insects.

Controlling weedy plants, particularly over summer, will help reduce pest insect habitats and provide some control of pests.

Pest Suppressing Landscapes

The GRDC and CSIRO have investigated the types of landscapes that are best suited to controlling crop pests. The project found:

- Both pests and beneficials can be found in a range of habitats in grain cropping landscapes throughout the year.
- Pastures play a key role in providing habitat for pest populations.
- Pests were more commonly found on exotic weeds than on native plants.
- Native vegetation remnants in good condition (i.e. containing few weeds with an intact understory) may reduce the number of pests and support beneficials.
- Management of weeds in pasture fields may be crucial for achieving pest suppression in nearby grain crops.
- Highly weedy native vegetation patches may also be a source of pests – growers should take stock of where these are in relation to high-risk crops.

Growers who are thinking about re-vegetation can choose ‘low-risk’ native plants that don’t harbour pests but do support adult and immature beneficials.

More Information: Dr Paul Umina, 03 9349 4723, pumina@cesaraustralia.com

AWB Wheat Quality Fact Sheet

Sprouted Grain

AWB Receival Standards

When visual sprouting is detected, there is a nil tolerance unless the Falling Number of the delivery is assessed. Where the Falling Number is assessed, the visual sprouting limit no longer applies provided that the relevant Falling Number standard is achieved.

The Falling Number minimum standard to be achieved varies for the different milling grades. For Feed grades there is no minimum requirement.

The assessment method used at receival sites depends upon the severity of sprouting and is reliant on the availability of testing equipment.

The Receival Standards require on site load by load testing for Falling Number once visual sprouting has been detected in deliveries to that site, or a nil tolerance is applied for Sprouted Grain in milling grades.

Two alternative procedures for testing Falling Number can be incorporated if Receival Agents choose not to apply the standard procedure.

The first involves the off-site analysis of 500MT running site samples for each milling grade received. The running samples are a composite of individual loads. In this case, deliveries with Sprouted Grain will be accepted up to a set percentage for that grade based on the Falling Number result exceeding a pre-determined minimum. When the Falling Number on a site running sample falls below the minimum, no visually sprouted grain will be accepted.

The second alternative involves conducting on-site testing of 250MT running samples. If the Falling Number of the running sample is at least 20 seconds above the applicable receival standard minimum, then loads containing up to one percent Sprouted Grain will be accepted. In contrast, a Falling Number test will be conducted on individual loads containing greater than one percent Sprouted Grain, or loads that contain any level of visually sprouted grain when the Falling Number of the 250MT running sample is less than 20 seconds above the applicable receival standard minimum.

Note that adoption of one of the above alternative procedures requires the prior written consent of AWB and does not relieve the Receival Agent's primary obligation to comply with the Receival Standards.

Nature

AWB's definition of Sprouted Grain is when the grain's outer covering of the wheat germ is split. It includes any further advanced stage of growth of the germ. Kernels exhibiting early stages of sprouting are those where the covering of the germ is split but without further development of the shoot. Grains that have had the germ knocked off or scalloped out due to header damage, or grains with pinholes are not considered sprouted.

Relative to sound grain, those that are sprouted are often visibly larger due to swelling from moisture absorption.

While grains with 'pinholes' are not considered sprouted, their presence may indicate the possibility of Sprouted Grain in the sample. Therefore it is recommended that an inspection for Sprouted Grains be conducted.

Grain exhibiting the early stages of sprouting is less noticeable and may only be detected through the use of the Falling Number test. This is the internationally recognised method used to determine the alpha amylase activity of the grain, measured in seconds, which is an indicator of weather damaged grain.

Cause

Sprouting occurs as a result of rain at harvest time, where moisture penetrates the outer layers of the grain, initiating the germination process. This involves the synthesis and release of enzymes that attack starch, protein and lipid reserves within the grain, rendering it unsuitable for milling purposes. The most destructive of these is alpha amylase that attacks starch.

Impact

Sprouting can have serious effects on end product quality and customers closely monitor wheat deliveries for Sprouted Grain.

As mentioned earlier, sprouting increases the activity of enzymes that are responsible for breaking down the important building blocks of grain that are vital for all end products. Alpha amylase breaks down the large starch molecules to smaller sugars making them readily available as an energy source to the growing seedling, whilst the enzyme protease breaks down protein. Sprouted Grains therefore contain damaged starch and protein components resulting in the production of poor quality end products.

For example bread made from flour with high enzyme activity will have a very dark crust and a sticky interior, or in severe cases the loaf may have a hollow interior. Noodles made from sprouted wheat will be sticky, and in some cases disintegrate during the cooking process.

Blending Grain

It is important to note that for all practical purposes blending grain with a low Falling Number with grain having a high Falling Number will always reduce the overall quality of the entire grain parcel, and sometimes with disastrous consequences.

For example if equal portions of grain were blended, one portion having a Falling Number of 200 seconds and the other having a Falling Number of 400 seconds, the overall result for the blended grain would be around 260 seconds, at best. For this reason the blending of parcels of grain even with low levels of sprouting should never be attempted as it is likely to downgrade the value of the overall blend.

What can be done?

As sprouting is caused by rain at harvest it can be difficult to avoid. With current technology, it is impossible to grade sprouted wheat out of sound wheat. In reality the only action growers can take to minimise the risk of sprouting, is harvesting the crop as soon as it is ready to avoid harvest rainfall. However care must be taken to ensure the grain is fully mature.

Once harvested, grain exposed to moisture may sprout even further, therefore harvested grain must be stored in a manner to ensure moisture ingress does not occur.



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Upcoming Events Calendar

Trees For Life Threatened Flora Project: Diary Dates

Put these dates in your diary for upcoming Trees for Life Working

Monday November 9

Lowly Greenhood. 'Peppermint Gully', near Hallett. Monitoring.

Tuesday November 24

Spalding Blown Grass. Tarlee, Riverton and Spalding. Monitoring.

For more information about the working bees or to register your interest please
contact Erica Rees via email

ericar@treesforlife.org.au or on 0408 812 677

2016 GRDC Grains Research Updates- "Informed Decisions- Driving Change"

Adelaide

Tuesday 9th and Wednesday 10th February 2016

Adelaide Convention Centre

For more information keep watch at www.grdc.com.au/UpdateDates

GRDC Grains Research Updates provide cutting edge research, development
and extension information needed to improve the profitability and sustainability of
grain growing enterprises.

The Updates bring together leading researchers, advisers and growers from
across the south eastern Australia.



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MERINO SUPERIOR SIRES

Nominations are being accepted by the Australian Merino Sire Evaluation Association (AMSEA) for the 2016 joinings of the AWI / AMSEA Merino Lifetime

The AWI / AMSEA Merino Lifetime Productivity Project is designed to leverage current sire evaluation trials run at several sites across Australia to collect a wide range of lifetime productivity traits, including fleece and reproduction. As such, by nominating a sire in the AWI / AMSEA Merino Lifetime Productivity Project, you are also nominating a sire in the standard sire evaluation trial.

As an entrant in the AWI / AMSEA Merino Lifetime Productivity Project, you will be provided with the full range of results that AMSEA publishes, including within site breeding values as well as ASBVs. Regular field days will also be held at the sites in order for you to inspect sire progeny and receive updates on the progress of the project.

92 doses of semen will be required for the project. Doses in addition to what would be normally required for the sire evaluation trial (between 50 and 60) will be purchased at \$10 per dose excluding GST. The payment will be made in the form of a reduced entry fee that is charged by the site to the entrant.

There will be a limited number of spaces available for fully funded entrants that meet certain selection criteria and will be designed to enhance the genetic diversity of the trial.

How to nominate a sire

Follow this link to the [Merino Superior Sires](#) website to download the Nomination Form. Complete and return it to AMSEA by the closing date of 20 November 2015. Once nominations are closed, sires will be allocated to each site based on a number of selection criteria including genetic diversity and linkage.

Owners of nominated sires will be contacted by AMSEA in early December to inform whether their nomination has been successful and to arrange semen delivery for those sires that will be joined in 2016.

Owners of successful sires will be asked to complete an AMSEA Sire Entry form as well as an Entrant Agreement prior to the entry being finalised.

Owners are able to nominate up to 3 sires.

Further information

Ben Swain
Executive Officer
Australian Merino Sire Evaluation Association (AMSEA)

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From Australian Merino Sire Association 2015



The following vacancy is now open through Jobs SA and external applicants.

Enquiries to: Kate Pearce – 0429 362 002

Applications to: Jeannine Naughton –

dewnr.nynrmjobs@sa.gov.au

Applications close 8th November 2015

Ranger Community; Southern Flinders / Upper North District

Vacancy # 2015-7126

Duties

In conjunction with the Team Leader (Community) and other district staff, the Ranger (Community) will contribute to the effective operational delivery of natural resource management programs and projects at the district level, in accordance with the Regional Natural Resources Management (NRM) and DEWNR Plans. This will require the Ranger to work across the landscape, both on and off reserve, to coordinate and integrate community and stakeholder engagement in NRM related activities. As a team member, the Ranger (Community) will contribute to the delivery of the broader outcomes of the District which will include Landscape Management and Fire Management. The Ranger will also contribute to effective community engagement within the Southern Flinders / Upper North District.

Special conditions

This is a contract / term vacancy up to 36 months. A current Class C drivers licence and willingness and ability to safely operate a 4wd is essential. A National Police Clearance Check is essential. Will be required to participate in fire management duties.

Additional notes

Applications need to include a Resume and a letter of application (of no more than three pages), addressing the Core Competency Elements and where necessary, the Technical, Professional/Knowledge and Experience. See the Applicant Guidelines document for guidance. Applicants are required to complete the Pre-Employment Declaration Form if not currently employed by the Public Sector.



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