



Crops to Consider After Esperance January Rain

The Esperance rains of up to 250 mm on the 4-6th of January 1999 have important short-term and long-term financial implications for sandplain farmers. Waterlogging of winter crops on the Esperance sandplain in 1999 is already a real threat, particularly in low-lying areas. Salinity expansion is also an immediate threat. My experience of re-visiting Jerramungup regularly suggests that, a few years after very wet events, salinity areas increase in size.

You may not feel like planting a crop now – after harvest and during the holidays. However, while the surface soil is wet, and there is still some length to the summer-autumn season, it is an ideal time to plant a crop. The widespread adoption of no-tillage will ensure adequate seeders are available for any crop type. Retained stubble and no-tilling will help minimise soil water loss during summer (and winter). These factors have helped reduce our drought risk, but they also expose us to greater risk of crops being too wet during winter – particularly in low-lying areas.

Which crop types to plant?

There are only four crop types that exist in agriculture, as Professor Dwayne Beck from South Dakota would say. These are cool season grasses (like wheat, oats, barley and rye), cool season broadleaves (like our common pulses and oilseeds), warm season grasses (like sorghum, millet, sudax, corn) and warm season broadleaves (like safflower, sunflower, cotton, soybean).

It makes more sense to grow a warm season crop during summer than a cool season crop. However, it is possible to



Above: Grain sorghum at Ken deGrussa's, Neridup, photo: 18th December 1998.



Left: Sunflowers growing in areas of South Dakota that were not possible with tillage and no stubble.



Below: Jim Baily's grain sorghum at Wellstead in the mid-90's.

grow a cool-season grass-crop, like barley or oats in January. Barry Morten of Jerramungup did in 1982 and harvested a 1.2 t/ha barley crop in June-July. Likewise, many of you will have scratched oats in after a February-March rain with some success. However, the best crops to grow during the summer are warm season crops as they will dry the soil profile better and are more water use efficient than cool season grasses (common cereals).

This Special Edition was produced by Bill Crabtree (WANTFA's Scientific Officer) with assistance by information provided from, or discussions with, Andy Thomas (Wesfarmers Dalgety, Perth), Wayne Smith (Consultant, Albany), Ben Curtis and Andrea Hills (AgWA, Esperance), David Smyth (Paramount Seeds) and Nick Duane and David Pfeiffer (SBS Rural IAMA). However, due the quick production of this publication they were unable to provide editorial comment.

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Warm season crops offer many benefits to our current cool season cropping systems. These crops are a radically different crop-type which inject desirable diversity into crop rotations. The lack of diversity in our wheat:lupin rotation is why it has mostly failed. Weeds, insects and diseases are greatly frustrated by diverse crop rotations.

It is economically important to grow crops that use the right amount of water. No-till and stubble retention systems are more efficient at conserving water and therefore often need crops in the rotation that use more water than just cool season crops. Too little water use means too much water is sneaking through to the groundwater and too much water use invites drought



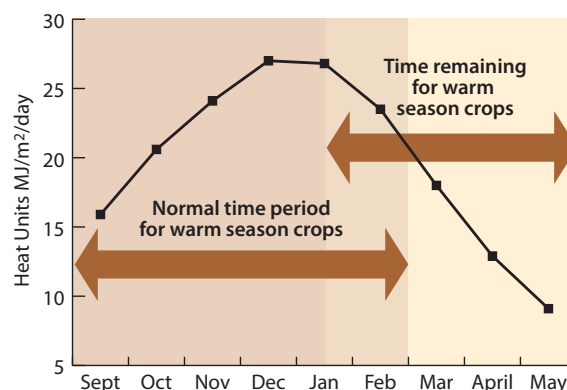
Geoffrey Marshall's sorghum at Hyden sown last spring on 1 metre wide row spacings.

and poor yields.

While warm season crops are new to most of us, they do have their sceptics. However, three years of mostly positive farmer experience, even in very dry conditions, have shown that they have a place in our new no-till and stubble retained agricultural systems.

Is January too late to plant warm season crops?

No, however, warm season crops are best planted before Christmas. Planting after this date, may not allow enough heat units for grain crops to properly mature for harvesting by May, when winter sowing



starts. However, if stock feed is of value in your farming system, then growing a forage crop like sorghum, sudax or millet avoids this problem. Dual purpose crops provide management flexibility.

Seeding needs to be done as soon as possible to ensure that there is enough heat left to finish the crop (see graph of Esperance heat units from the Met. Bureau). The soil temperature will be adequate during January and is probably the main (perhaps often the sole) reason for poor establishments in spring.

It is better to plant a late warm season crop on parts of a flooded farm in summer, than leaving all paddocks to go feral. Some burnt pastures and stubbles, south of Condingup, may be best left to grow as unchecked "pasture" to ensure enough cover grows for wind erosion protection. However, it also depends on the weed species present. Plants like wireweed, melons and stink-weed will grow enthusiastically after such a big rain and their residues and seeds will negatively affect several subsequent crops. These weeds are hard to kill when mature or droughted.

It may be more profitable to sow a warm season crop that extends 4 weeks into the growing season of a winter crop than not to plant such a crop. Why? Well a barley crop that is waterlogged and yields 1.0 t/ha is not profitable, but costly. And who knows the probability of this? You are the best one to decide. Raised beds are another way to reduce waterlogging, but they may be more expensive, require more management and contribute more to salinity than a warm season crop.

Which warm season crop and variety to plant?

Our WA experience so far suggests that, in our south coast environment, it is probably safest to try one of three crops – sorghum, sudax or sunflowers. The quickest maturing crops of all these are most desirable. For grain sorghum, with forage value, Western Red, New Nugget, Legend or DK35 varieties should be considered, and for forage only, Jumbo.

For sunflowers the quickest maturing varieties available are SunOleic04 and Hysun 25. The Advantage variety takes a little longer to grow, but may be quick enough.



Left: These sunflowers yielded 500 kg per hectare at Narambeen 12 months ago through a very dry summer – well done Tony Seymour!

Right: Allen Postlethwaite's sorghum was sown 3 months ago on 28" wide rows. This photo shows how he had to chase the moisture.



Establishing a crop

No-till seeders on wide row spacings (80 cm to 1 m) are the recommended practice if sowing into stubble. Narrow rows are needed if forage crops are sown into pasture – to stop erosion up the wide furrows. Chasing the moisture will be imperative. Note the Allen Postlethwaite sorghum establishment photo, where the furrows are reasonably deep to chase the moisture. Note also the mat of stubble between the rows to reduce evaporation losses.

Be extra careful with **fertiliser toxicity** on such wide rows. Applying 30 kg/ha of Agflow or DAP may be too much for sorghum which, according to Yvonne Postlethwaite's PhD studies, is more sensitive to N toxicity than canola. These crops will respond to nitrogen, so perhaps strategically topdressing urea before rain is an option. Agrotain® will also reduce loss. Using a side-banding



Geoffrey Marshall's seeder modified for wide rows. Two rows run close together to separate seed and fertiliser.

seeder is the safest option – one can be made from shifting openers on your own no-till seeder.

Grain sorghum seed retails for around \$120–140 per 25 kg bag, depending on variety. Seed count is important in determining sowing rate. As a general rule, grain sorghum has a seed count of approximately 30,000 seeds per kg. Field

establishment varies from about 50%–75% plus, depending on equipment and conditions. So sowing rates should be 1.5–4 kg/ha or 30,000 to 60,000 plants per hectare.

The **cost of the seed** is likely to be about 70% of the cost of barley or oats at the low seeding rates. Such low seeding rates will require careful monitoring during seeding. The seed should be sown at 4–6 cm depth. If chasing moisture, stubble will protect the crop from wind events. Make the rows perpendicular to strong winds. Disc seeders and press wheels would be the most erosion-safe seeder.

Observations from Nick Duane and David Pfeiffer suggest that **gravel soils** are not the best for sorghum. Deeper duplex soils provide the best chance of success and the pH should not be above 4.6. Sunflowers on acidic sandy soils at Esperance have not been as successful as when grown on the heavier soil types found elsewhere in the state.

Seed can be brought into WA within several days if local supplies are used up. But it is best to register your interest immediately.

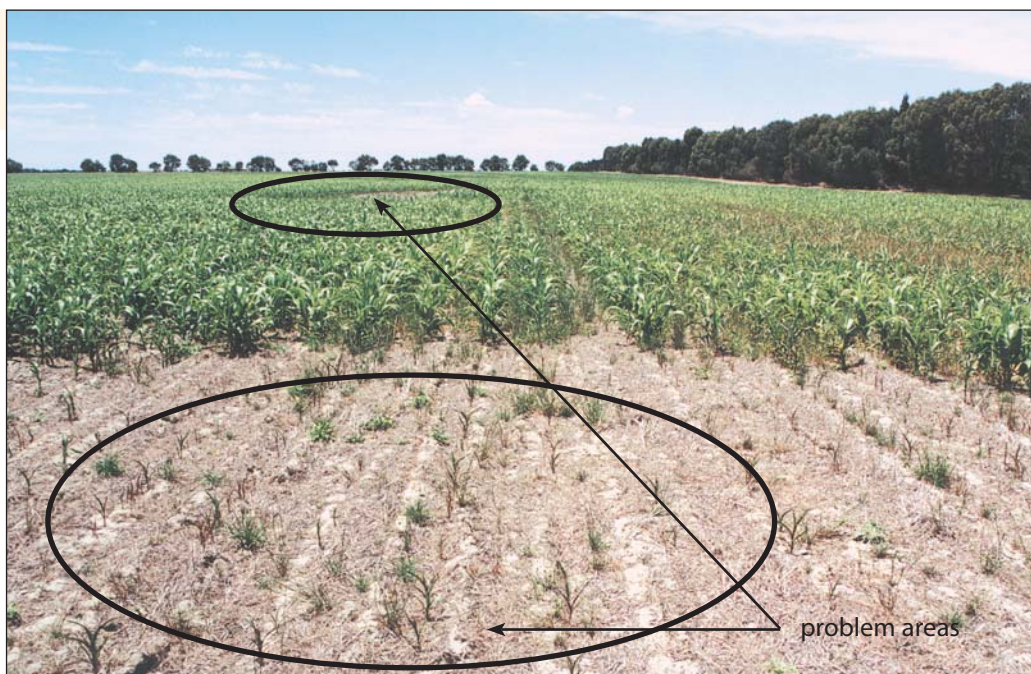
Weeds and Insects

Waiting for a weed germination before seeding sunflowers is important as there are no grass selective herbicides available. Trifluralin can be used, but its role would be questionable during summer with little soil throw, lots of stubble and very wide rows. Sunflowers are very sensitive to 2,4-D and SU's, so beware if SU's have been applied on the soil in 1998 and the soil pH is above 6.0.

This disease or problem which affected Ken deGrussa's sorghum has yet to be determined.

With sorghum, weed control options are plentiful. You can apply Atrazine and glyphosate the day before sowing and Ally can also be applied pre-sowing and garlon is registered for post sowing applications. Canola or lupins would make for good following crops as there may be some triazine carry-over. However, their sowing dates could be delayed if it is desirable to allow the sorghum to mature and be harvested.

Watch out for insects. Wayne Smith's experience with spring sown crops in 1998 near Albany suggests that his clients would have done well to have used 200 mL/ha of SP's or 500 mL/ha of chlorpyrifos as a matter of course. Pests that can cause concern are grasshoppers, cut-



worm, slugs (apparently) and aphids. And who knows how many of these will occur in the first few weeks of establishment?

Grazing management

Grazing management apparently can be tricky due to a build up of prussic acid, which occurs mostly when the plants are small (less than 80 cm) and the stock have empty stomachs. Less risky situations are when the plants are drought stressed, or after rapid regrowth following stress or nitrogen application. Ken deGrussa at Neridup has had a fair degree of stock safety with his September/October sown

sorghum. Forage sorghums are low in sulphur and sulphur stock licks will decrease the risk of prussic acid poisoning.

Further information

- “Summer Forage Crops” by Tim Wiley, *AgWA Pasture Update 13/98*.
- “Sorghum Agronomy Notes: growing dryland grain sorghum” by Scott Gibson of Pacific Seeds, August 1995.
- “Avoiding Sorghum Toxicity” by Wheeler, Mulcahy and Rapp in the *CSIRO's Rural Research 152*.
- WANTFA Newsletters* (see list below).

ANNUAL CONFERENCE

Esperance 11-12th FEB '99 Esperance Anglican Function Centre

An exciting group of scientist and farmer speakers will be the highlight of our Esperance conference. Visiting speakers include Canadian weed ecologist Dr Doug Derksen, local UWA Prof. Stephen Powles, Victorian farmers Allen and Yvonne Postlethwaite, Lake Grace farmer Steve King, returning researchers Peter Burgess and Brad Peters (Cropcare), AgWA Merredin researcher Dave Minkey, Bill Crabtree, and more.

The conference will be held before the SEPWA meeting. Hope to see you there. For registration information, call John or Yvonne on 9386 4404.

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