

Spring - Summer Sowing of Crops

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KEY POINTS

- Sowing winter crops from August to October is possible in some higher rainfall areas
- Planting of some summer crops in October to December for grain may also be possible in some situations, but crop choice and obtaining good agronomic and market advice will be critical
- Adequate soil depth and moisture holding capacity is essential with delayed sowings, otherwise reliance on in-crop rainfall is too great
- Crop type and paddock choice have a big influence on likely success
- Areas that were too water-logged for normal sowing times, or where crops were lost due to flooding etc. may present the opportunity to sow either a winter or summer crop
- Higher temperatures and moisture stress at flowering can impact on yields, as can insufficient moisture during grain fill

Introduction

Late winter (August) or spring (September to October) sowing of a range of winter pulse, cereal and oilseed crops can be an option for higher rainfall areas of:

- South East and Kangaroo Island of SA,
- South-Western Victoria, southern Gippsland and areas of Tasmania.
- East of the Newell Highway in NSW.

Planting of a summer grain crop in October to December may be possible in some situations.

For other regions it would be more of an opportunity crop, especially where water-logged conditions during winter have prevented seeding or growth of existing crops.

In all situations there must be adequate soil depth and water holding capacity and preferably a full moisture profile to enable crops to handle higher transpiration rates. The move to reduced or no-till and stubble retention has changed the dynamics of moisture conservation enabling more even, quicker and deeper moisture penetration with less runoff and surface losses. Improved soil structure and reduced compaction has enabled roots to penetrate deeper and access more available subsoil moisture. Stubble retention and availability of sowing machinery with better trash clearance, seed placement and guidance has enabled delayed sowing to be a more viable option.

Sowing of some summer grain crops in late spring (November) to early summer (December) may also be an option in some areas with deep soils and adequate soil moisture or with available supplementary irrigation.

Delayed Sowing - Benefits vs Risk

While August is actually late winter, in this bulletin we will refer to sowing in August through October as 'spring' sowing. This delayed sowing offers potential benefits as part of a herbicide resistance strategy with more opportunity to use non-selective control of emerged weeds compared to earlier sowing times. Better weed control and spring sowing enables slower growing crops (eg chickpeas) to emerge and grow quicker during warmer conditions. Pulses like field peas can also be desiccated or provide the option of being able to be cut for forage to control resistant weed escapes or difficult weeds.

Delayed sowing also enables growers to spread their farming operations by reducing time and machinery pressure at earlier sowing times. More livestock can be carried over winter, and the time period between sowing and harvest is also significantly reduced with a 'spring' sown crop. Diseases such as ascochyta in peas and lentils are favoured by cold and wet conditions, and so the disease risk is reduced by the delayed sowing dates.

However there are some risks associated with 'spring' sowing that may not occur in a traditional winter cropping situation. Insect pressure is usually greater with 'spring' sown crops, particularly Native budworm and aphids. There is greater pressure from other diseases such as powdery mildew in peas and rust in beans. Many southern varieties have less resistance to these diseases than those grown in the north; hence they may need to be managed with fungicides. Viruses may be potentially worse with warmer temperatures, so a seed treatment

with Gaucho® 350SD is desirable to deter aphid attack.

Excessively hot temperatures during late spring and summer can lead to reductions in yield through poor pod set and reduced grain fill. Greater attention will need to be paid to timing of harvest as low grain moisture could result in more cracking and shattering. In very wet years, growers could also run the risk that sowing of a winter crop is delayed too late into 'spring', impacting on yield potential. Alternatively if a summer crop is ripening late during cool wet conditions there is the risk of a wet harvest. Irrespective of sowing date, it may be necessary to desiccate the summer crop to lower grain moisture and to facilitate harvest. Grain drying may also be necessary.

On areas that had been water-logged there is also a risk that further rain soon after sowing could result in that crop being lost, particularly with species that do not tolerate water-logging.

Growers must evaluate the risks and benefits of 'spring' sowing in view of their own individual soil types, machinery, location and availability of suitable crops.

Paddock Selection & Preparation

Keys to successful 'spring' cropping are correct crop choice, paddock selection and early preparation. Select paddocks that have good water holding capacity and sufficient moisture to allow a crop to mature over spring and early summer. Heavy clays and peat soils are the best options for 'spring' cropping with shallow soils likely to dry out too early, as will sandy soils unless they overlay a shallow clay layer. "Hostile" sub-soils or compaction layers can restrict deep root development leading to shallow rooted plants that are likely to stress at critical times. Greater reliance on in crop rainfall to finish the crop is an increased risk in traditionally winter dominant rainfall regions.

Best strategies may be to use direct drilling and knockdown herbicides, but there will need to be good weed control well before seeding. To ensure good establishment, sowing equipment must be able to penetrate and cover seed adequately without too much moisture loss. Cultivation can be a positive for seedbed preparation, but may also create unsuitably dry conditions for germination, particularly with large pulse grains, hence sowing may need to be delayed until the next rain. Worked soils tend to be less trafficable after rainfall and if left cloddy can cause difficulties with seed-soil contact and seed depth, especially small seeds such as canola which are sown shallow. Rolling, prickle

chaining and harrowing may assist, or an alternative cultivation strategy may be to prepare the paddock in early winter and leave it as a short fallow.

Be ready to sow when there is sufficient seedbed moisture and in many cases this window of opportunity will be quite short. Seeding rates will need to be increased by approx. 20% as spring sown crops will have fewer tillers and be shorter in stature as growing time is more compacted. Aim to establish a healthy plant population as there is greater reliance on a good crop canopy to reduce surface moisture loss, particularly in the absence of stubble cover, and deter aphids entering the crop and spreading viruses. Nutrition, pest control and weed control are all important considerations with spring sowing and quite different to a winter crop.

Cropping methods

Direct drilling into stubble retention systems without cultivation can lead to more efficient water use and less moisture loss through early evaporation prior to canopy closure. These same systems in higher rainfall areas may initially provide greater soil moisture before sowing, but could be a positive or a negative depending on location, season and circumstances.

Some 'Spring' sown crops could also benefit from sowing in a wide row system (50cm to 100cm) particularly into standing/retained stubble. This system is becoming more common with some winter sown pulse types (chickpea, faba bean) and oilseed crops in medium to low rainfall areas to handle a dry springs. Wide rows should be combined with stubble cover to conserve inter-row soil moisture for later during flowering and grain fill to maximise yield and quality. This should also suit 'Spring sown' crops as an aphid deterrent and given that moisture stress is expected later in the season as soils dry out over summer.

Wide row sowing is a traditional practice with dryland summer cropping in many countries. For example Navy beans in the USA. This enables even shallow rooted plants to access moisture in the inter-row at critical times. Grower experience in southern Australia is that this has been successful in summer crops like sorghum, millet, maize and sunflowers when sown at up to 1.0 metre spacing. Stubble presence is critical though for weed control and to prevent soil evaporation losses.

Crop Choice

If 'spring' sowing follows a failed winter crop where herbicides were applied, it is important to know and follow the label guidelines for plant back periods and may limit what crops can be safely grown.

Soil pH requirements must also be taken into account for some crop species.

Which Crop

There are a range of pulse, oilseed and cereal crops that can be sown in 'spring' or early summer. Crop choice will be influenced by the soil type and pH, paddock conditions, farmer experience, likely gross margin, available markets, risk, sowing date and availability of seed or inoculants.

Winter Pulses

Pulse yields are generally lower when sowing is delayed because of reduced height and a shortened flowering duration (temperature controlled), irrespective of soil moisture. In some areas or very wet years the soil may not dry out early enough to sow a winter pulse at normal times, and spring seeding may become a necessity or more common occurrence.

Winter pulse crops that are most suitable for 'spring' sowing are field peas, lentils, desi chickpea and perhaps some kabuli chickpea varieties. Faba beans and particularly broad beans are not as well suited to 'spring' sowing, but sowing in early August may still be beneficial given the right situation. Crop height is likely to be quite short for harvest, but may be assisted by going to wide rows and standing stubble which have shown to increase crop height in winter sowings. Early maturing narrow leaf lupins sown at higher densities are another possibility on the right soils, but albus lupins are less likely to yield well.

Be prepared to change crop choice if water-logging is prolonged.

Lentil

Correct paddock choice is critical to success with lentils. They do not tolerate low pH or water-logging, so paddocks where there is a risk of this occurring should be avoided. Paddocks must be levelled and clean of stones, clods and sticks to facilitate harvesting of what is likely to be a shortened crop.

Lentils have been successfully grown in areas like the South East of SA with 'spring' sowing from August through to late September and trials with green lentils in Tasmania have shown real potential. Variety choice will be mainly determined by maturity ratings and marketing

class. Yield comparisons with different varieties under 'spring' sowing have not been tested.

Variety choice ranges from early maturing (eg PBA Blitz or PBA Flash) to later maturing, more determinant types (eg Boomer or Tiara green lentils). Lentils are remarkably drought tolerant but need to produce sufficient height to harvest. Later maturing varieties did perform well under 'spring' sowing in trials during the late 1990s, partly because of their height and longer flowering duration. There are new short season varieties with good early vigour and respectable plant height even under drier conditions. Standing stubble and wider row spacing has helped with height and harvestability in winter sown lentils and should assist with 'spring' sown crops. Foliar disease protection may still be required depending on the season, variety, sowing date, row spacing and date of canopy closure.

Refer to "Growing Lentils" and "Disease management in lentils" bulletins for further agronomic information on growing lentils.

Field pea

Field peas are suitable for loams to clay soils with only some tolerance to water-logging. They are one of the most drought tolerant pulses and successful spring sowings in southern Victoria and South east SA have already shown that they have potential. Pea varieties now differ considerably in maturity times and growth habit. Some of the earlier flowering and maturing varieties like PBA Twilight, PBA Gunyah, PBA Oura or PBA Percy may be more suited to 'spring' sowing than later maturing varieties like Kaspera or Morgan.

Note that viruses like Pea Seed-borne Mosaic Virus (PSbMV) can be worse under 'spring' sowing, so a seed treatment with Gaucho® 350SD is desirable. Varieties like Yarrum and Maki have some resistance to PSbMV and powdery mildew, and may have a better fit with spring sowing than southern varieties. Otherwise use of a suitable fungicide programme will be needed in powdery mildew susceptible varieties. Iron chlorosis in peas can also occur and will need foliar treatment on certain soil types. Peas may not be an option if water-logging is prolonged beyond early October, and wide rows beyond 30cm may lead to greater lodging in erect types.

Whilst growing field peas for grain may be a main aim, they are also be more versatile and can be a hay or silage option should potential seed set or grain yield be deemed unsatisfactory or for weed control.

Refer to "Growing Peas" and "Disease management in Field peas" bulletins for further agronomic information.

Chickpea

Chickpea varieties now being grown in southern areas have resistance to the otherwise devastating disease *ascochyta rabei*, and are no longer a riskier crop option. Their ability to tolerate warmer temperatures during flowering makes them ideally suited to 'spring' sowing, and performance on wide rows will help conserve moisture and underpin yield. Variety choice will depend on market class and could be influenced by variety maturity ratings. They could also be considered for sowing as a summer legume, given they are considered sub-tropical and need warmer temperatures for pod set.

Genesis 079 (a very small seeded kabuli) is the earliest flowering and quickest maturing chickpea variety available, but it has short height at harvest. This is manageable at harvest with machines set to harvest lentils etc close to the ground. Genesis 509 is the earliest maturing desi type, but its grain quality is not as good as the market desires. Current commercially acceptable varieties like PBA Slasher (desi) and Genesis 090 (small kabuli) are taller crops and have high yields and mid maturity.

It is the larger seeded kabuli types like Almaz and Genesis 114 that are later maturing, more determinant in growth habit and will require a longer growing season to fill grain. Seed size is a major consideration with kabuli chickpeas for marketing and price, and it may be difficult to achieve the potential seed size in some areas unless supplementary water is applied.

Chickpea crops are highly attractive to Native budworm, and remain green for much longer than most other pulses. Desiccation may be necessary for harvest where ripening is uneven or if rains persist.

Refer to "Growing Chickpeas" and "Disease management in chickpea" bulletins for further agronomic information.

Lupin

Narrow leaf lupins sown in August, even perhaps September may be a possibility in very specific circumstances and a taller, shorter season variety like Mandelup may suit. Seeding rates would need to be increased to compensate for less tillering and wide rows might help increase harvest height. Jindalee is a variety that has a vernalisation requirement (cold period before flowering), and is therefore deemed

unsuitable for 'spring' sowing. Tolerance of acid soils may also be a factor in lupin selection, particularly in high rainfall regions where liming has not been adequate.

Albus lupins flower and mature later than narrow leaf types and are less suited to short seasons or dry finishes. Hence they are less suited to spring sowing despite having greater early plant vigour and final height than other narrow leaf lupins.

Faba/Broad bean

Only in particular areas and on deep soils is 'spring' sown beans a possibility, and then only if sown early August into a heavy soil that holds moisture and does not crack open. The crop would be quite short, and would need to tolerate a dry finish. Farah or Fiesta are better variety options given that they are taller varieties and handle drier conditions better than Nura. Wide rows and stubble retention may also be an option to help increase height, aphid management and moisture at pod fill.

Broad beans like PBA Kareema and Aquadulce would be too late in flowering, grain fill and maturity with likelihood of low yield and too small of a seed size.

Vetch

Vetch can be grown successfully on sandy soils through to clays. Vetches are versatile as grazing, green manure, silage or hay and grain production. Like peas, they can produce respectable dry matter for high quality forage similar to pure clover hay. Market size and demand for vetch grain is very limited.

Growing varieties that are resistant to rust such as Morava a late flowering type that will produce more forage than Rasina, however it's earlier maturity but may be more suited to grain production if 'spring' sown.

Cereals

The most likely cereal to be sown in 'spring' is barley. Sowing time can extend from August through into October on suitable paddocks. In 'spring' sowing trials, Barley Yellow Dwarf Virus (BYDV) has been shown to result in significant yield reductions in about 20% of years. For this reason choosing a variety that has resistance to this virus may be the safest to sow in 'spring'. Resistance to BYDV is associated with the presence of the Yd2 gene, but other genes are also involved. Other barley varieties are acceptable for 'spring' sowing except in years where BYDV is prevalent. Shorter season barleys may be more suited to 'spring' sowing than others, particularly where sowing is quite late.

With 'spring' sowing, most barley varieties will have higher protein content due to warmer conditions during ripening and increased mineralisation of soil nitrogen during spring. Hence 'spring' sown barley should be viewed as likely to produce only feed grain quality. Refer to barley variety sowing guides.

Sowing rates may need to be 100 kg/ha or higher to produce sufficient tillers to achieve good yields. Crops should be monitored at ripening for barley grub, which can cause significant yield loss under the right circumstances.

Oilseeds

Canola

Canola can be successfully grown in spring provided that sowing is not too late for the area and that varieties with the best maturity are used. The cut off point for sowing can range considerably with the location. Sowing of canola can be up until early to mid September for the quicker finishing areas (eg Naracoorte to Frances area and on Kangaroo Island in SA), to early October (Glenroy to Lucindale area), through till late October (near Millicent).

Delayed sowing tends to close up differences in flowering time so that early and late flowering varieties flower much closer to each other than when sown in winter. 'Spring' sowing trials in the late 1990s have shown that early flowering varieties often perform best with poorest yields achieved by triazine tolerant varieties.

Overall, canola yields tend to be reduced as sowing is delayed due to less vegetative growth before flowering and because the flowering duration is reduced from around 6 weeks with winter sowings down to around 3 weeks with

'spring' sowings. Yields of canola sown in August might vary from 1 to 1.7T/ha.

Oil content is also affected by 'spring' sowing because canola oil content is reduced by soil moisture deficit and by warmer temperatures during grain fill. Oil content is likely to be in the low 40% range compared to high 40% range for winter sowing.

'Spring' sown canola crops should be monitored closely for pests such as plutella, aphids and rutherghen bug. Plutella may be difficult to control, and is the one reason that might stop growers from spring sowing canola.

Refer to the "Growing Canola" booklet, variety guides and factsheets for agronomic information.

Linola and linseed

Linola and linseed remain 'spring' sown options on alkaline, black, clay soils but are severely affected by trace element deficiencies on grey alkaline soils. Trace element deficiencies such as Fe and Mn can have significant effects on crop growth and yield. When sown in August, linola and linseed may yield between 1 and 2 T/ha. Both linola and linseed have only a limited market so should only be considered if a contract can be secured.

Paddock selection for both crops is critical, as weed control options are available however there is no early post emergent option. Post-emergent weed control is limited to once the crop has reached 10cm in height. Crops should be closely monitored for pests at emergence and after flowering as both crops are highly attractive to Native budworm.

Safflower

Safflower has been regularly grown in the South East of SA and occasionally in other areas after winter water-logging. It prefers deep soils. Sowing time is from July onwards as a late winter sowing option in many southern regions. Spring sowings can range from early September until late October. Yields can range from 1 to 2.5 T/ha depending on soil moisture availability with yields reducing as sowing is delayed. As with linola and linseed, safflower has only a relatively small market for birdseed and oil. It is wise to secure a market prior to sowing and it is hoped that new varieties with better oil quality and higher oil content will be in greater demand.

The disease Alternaria can cause yield loss in certain seasons, and Sironaria is the only variety with some resistance to Alternaria. Safflower is susceptible to Manganese deficiency,

particularly on grey clay, alkaline soils and may require a foliar application of Mn.

Refer to “Raising the bar with better safflower agronomy” and factsheets for additional information.

Fenugreek

Fenugreek can be grown successfully on loamy soils through to clays. ‘Spring’ sowing might be a possibility in the right situations, but that is an unknown. Consider it to be somewhat like vetch. Market size and outlets for fenugreek grain is limited.

Seek seed, variety and marketing advice from a marketer or processor who deals with Fenugreek before growing it, especially as a ‘spring’ sown option.

Summer legumes

In some wetter and cooler areas, sowing of a summer legume might be possible. There has been some limited research and grower experience doing this. Soils must have a high moisture storing capacity. Most summer legumes generally cannot be sown before soil temperatures reach about 16^o Celsius, which is perhaps from mid November onwards in many high rainfall areas. Harvest can be in late April to May, and can be after the seasonal break. Hence conditions are not as conducive to harvesting. Desiccation and grain drying could become necessities.

It is desirable to establish a market and be aware of indicative pricing for any summer legume prior to sowing them. Soil salinity or irrigation water quality can also be a major issue.

While these crops are legumes, and rhizobial inoculants are available, navy bean, adzuki and mungbean have at times needed nitrogen fertiliser at seeding or in crop because their growth is rapid when there is adequate moisture. Nodulation delays can otherwise affect final growth and yield.

Insect pests must be closely monitored and controlled, and these tend to be more ‘horticultural’ pests than what we consider normal ‘agricultural’ pests.

Mungbean

Mungbean is a summer legume with the shortest growing season of all the summer growing pulses. This means flexibility with its sowing date and a greater ability to double crop and produce acceptable dryland yields. It has been grown in some southern regions under irrigation and like adzuki beans it prefers sprinkler or row

crop irrigation to avoid water-logging. Its quick maturity can ensure reasonable harvesting conditions before it gets too cold and wet; alternatively desiccation may be required to terminate the crop.

Mung bean experience to date is that they are very sensitive to manganese deficiency on alkaline soils, but respond to foliar applications.

It is suggested that shorter season varieties like Crystal are more suitable, especially if sowing is delayed until closer to Christmas. More information can be found on the Pulse Australia website www.pulseaus.com.au but keep in mind that most of this information relates to the northern region.

Mungbean growers need to understand that there is a legal obligation to comply with hygienic requirements as set out under the “Code of Hygiene Practice” for mungbean established in 1989 by the Australian Quarantine and Inspection Service (AQIS). Sections of this Code outline growers' responsibilities for hygienic requirements on farm and during transport. Note that there is not direct licensing or inspection of on-farm handling and storage facilities. Arrange market, transport and delivery points before proceeding (see www.mungbean.org.au).

Navy bean

Dryland Navy beans have been grown in trials in the South-East of SA, but irrigation is a distinct advantage. High temperatures during flowering can affect early pod set, and that is where most yield potential comes from. Variety choice should be an erect type that is capable of being direct harvested.

Adzuki bean

Adzuki beans have been widely grown throughout southern NSW irrigation areas ranging from the Lachlan Valley around Forbes down to the MIA, CIA, and Murray Valleys. Historical yields have averaged around 1.5t/ha with paddock selection (soil type, irrigation layout). Irrigation timing is critical to successful management and higher yields. Some dryland crops have been grown in the southern high rainfall areas. Adzuki beans are often higher priced than Mungbean but the market is smaller and more volatile necessitating good marketing relationships. They are planted from November through until January relative to location and flowering time and can mature reasonably late if sowing is delayed. Adzuki beans are considered to be one of the harder summer legume crops to grow successfully requiring good management and advisor support. More information can be

found on the Pulse Australia website

www.pulseaus.com.au

Soybean

Soybean is a pulse but also an oilseed crop (see under Summer oilseeds below).

Other Summer Legumes

There are a range of more specialised summer legumes that could be grown, particularly those from the *Phaseolus vulgaris* species, each with their own peculiarities and niche markets.

Examples include Borlotti beans, red kidney beans, black beans and Pinto beans.

Seek market advice and more detailed agronomy information before attempting to grow these specialty crops.

Summer oilseeds

Soybean

Soybeans are grown dryland in northern NSW coastal regions, and may be an opportunity crop in southern high rainfall regions in exceptionally wet years. They are primarily an irrigated crop in southern NSW and northern Vic where yields have ranged between 3-4t/ha. They are a relatively easy crop to grow within the summer legume crops, and are marketed for their oil or for the premium culinary domestic market. When grown as a dryland crop in southern areas, eg South-East SA or Western Districts of Vic, choosing a short season variety such as Dejakl is critical, as is early sowing. This is also critical for irrigated crops in Victoria and planting after Christmas can often push harvest into May necessitating desiccation. More information relating to soybean and sunflower can be found on the AOF website;

www.australianoilseeds.com/ and DPI NSW website:

www.dpi.nsw.gov.au/agriculture/field/field-crops/oilseeds

Sunflower

Sunflower can be sown as either a 'spring' sown crop or as a summer crop. It can be either for birdseed or oilseed, depending on the variety. If grown dryland, then early sowing will be necessary and wide row spacing. Sowing can be as early as August or September, depending on soil temperature. It can also be as late as December.

Best dryland yields have come from either sand over clay soils with adequate soil moisture stored in the clay. Also yields have been good on deep, heavy clay soils where the roots follow the water table down as it recedes.

A major issue with growing sunflower is the damage that birds can do to mature heads before harvest, causing substantial yield loss and problems for growers trying to keep the pests away. Bird presence is worse where wooded areas are nearby for them to roost. Birds like cockatoos and corellas can travel long distances to eat sunflower seed in the head. Scare gun and shooting tactics merely re-locate the flock temporarily, and they return soon afterwards.

Summer cereal grain crops

In some wetter and cooler areas, sowing of a summer grain crop like sorghum, millet or even maize might be possible. There has been some grower experience doing this. Soils must have a high moisture storing capacity. Summer monocotyledonous crops generally must be sown based on soil temperatures. This can be when soils reach above 15^o Celsius for maize, but in cases like sorghum, up to 18^o Celsius. Sowing is thus from either October or from mid November onwards in many high rainfall areas. Sowing summer crops too early could lead to vegetative frost damage. Some growers have sown a short season crop straight after their cereal harvest. Grain harvest can be in late April into May, and often after the seasonal break. Hence conditions are not as conducive to harvesting and desiccation and grain drying can become necessary.

It is desirable to establish markets for any summer grain crop products before sowing them.

Maize

A short season maize (also known as corn) variety will be needed if grown as a dryland crop. Wide rows and specialised planting equipment is usually required to ensure even placement and plant population.

Sowing can be as early as September because of lower soil temperature requirements than other summer crops, but frost needs to be also considered. With later sowing, quicker varieties need to be selected to enable a reasonable grain yield. Maize, sorghum and millet are all very nitrogen dependant and this needs to be factored into costs when planning gross margins.

Grain Sorghum.

A short season variety will be needed for grain production as grain sorghum cannot be sown as early as maize or millet because of soil temperature and frost considerations. It also needs warmer temperatures than maize and millet to grow during summer. Protein levels are often lower than those produced in northern Australia. Digestibility can also be lower than other feed grains and this is often reflected in the prices offered.

Millet

Millets for grain are shorter season than either maize or sorghum and are also reliant on warm soil temperatures that see planting not commencing until October. They have been sown as late as early January in some situations, but harvest will likely be in May, so much earlier sowing would be more desirable. There are different types of millet, and also markets for them are limited, so speak to a marketer before proceeding.

Choosing a Crop Variety

Variety choice for all crops will be limited by a number of factors including maturity type, sowing date, disease resistance and availability of seed. In general, if sowing winter crops after August, choosing a variety of an earlier maturity type may be worth considering particularly if soil moisture may become limiting. This will also be wise for summer crops in general, but especially when sown closer to December.

Sowing Date

The optimum sowing date for winter crops sown in 'spring' varies with the crop and variety as well as the year. At any time there is probably a choice of several crops that could be sown and final choice could involve factors such as market, anticipated price, previous experience with the crop, yield prospects and attitude to risk. Be prepared to change varieties or crop if there is extended water-logging.

Reliability of spring rainfall and temperatures that are likely to be experienced during spring into summer will also influence sowing dates. In areas nearer the coast or that are more mountainous there is a greater ability to delay sowing of most crops longer than more inland areas. For example, in SA, optimum times for 'spring' sowing could be expected to vary from late August at Frances through to late October at Millicent.

Beyond these dates yield potential could be expected in an average year to decline due to increasing temperatures and moisture stress at flowering through to pod fill.

Further Information

There is a need for further research to compare the performance and quality produced of a range of 'spring' sown pulses, cereals and oilseeds. It is hoped that grower experience and any research conducted will provide more information on 'spring' sown crop options and yields.

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Major projects funded by

GRDC Grains Research & Development Corporation

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