

Time of sowing key to yield and profit

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Defining the optimal sowing time plays a pivotal role in the potential yield and quality of any given crop.

Early sowing accelerates early plant growth and maximises the plant's utilisation of the growing season. However, it can also increase the risk of frost damage during the reproductive phase of the crop.

Sowing later can help with weed control, yet increases the chance of grain filling during hot and dry conditions, resulting in lower yields and potential quality issues.

In recent years, farmers have sown crops earlier in the season (April-May) to make full use of the growing season and increase the chance of growing a high-yielding crop.

According to Darren Ray, Senior Meteorologist and Climatologist at the Bureau of Meteorology, climate variability has influenced most farmers' decision to sow earlier in the year, particularly in drought years.

"A major feature of climate variability comes from the Pacific Ocean, with La Nina events tending to produce wetter springs and summers for Australia while El Nino events tend to be drier," he said. "The past few years have seen strong influences from La Nina events. Indian Ocean influences have also impacted on late winter and spring rainfall.

"In 2006, an El Nino event combined with a positive Indian Ocean Dipole influence led to very dry conditions across South Australia, while in spring 2010 a near record-strength La Nina event, combined with a negative Indian Ocean Dipole event, produced record spring and summer rainfall for South Australia.

"In 2011, a weaker La Nina influence from August onwards opposed a weakly positive Indian Ocean Dipole event, with drier conditions in early to mid-spring quickly giving way to a wetter harvest period.

"The recent wet summers resulting from La Nina events have meant increased soil moisture going into the start of the growing season. Using farm management practices that conserve this has allowed many growers to sow earlier in the past few seasons. "An April to June drying



GROWERS ARE INCREASINGLY SOWING EARLY, OFTEN INTO DRY SOIL, TO MAXIMISE THE GROWING SEASON ONCE MOISTURE IS AVAILABLE.

trend across south-eastern Australia is another factor. Research has indicated the changes in weather patterns at this time of the year are related to the tropics expanding as the planet warms from climate change."

Darren says farmers can expect the higher temperatures experienced in recent growing seasons to continue for 2013, which may have an effect on spring flowering.

"In terms of shifts in the seasonal patterns, April to June conditions are tending to be drier and temperatures have increased by the equivalent of 1°C over recent decades," he said. "This has the effect of shifting spring flowering earlier by several weeks."

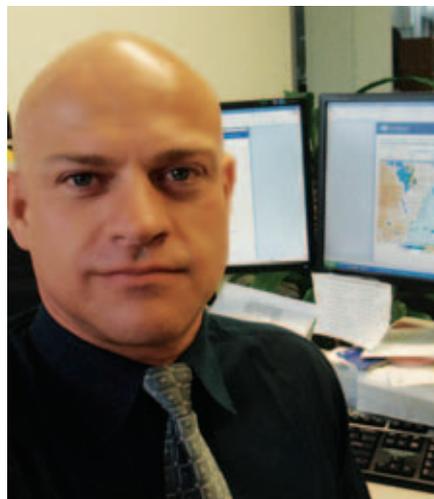
Agricultural consultant Jeff Braun says sowing early can lead to higher yields, and therefore higher profits.

"Sowing earlier has led to consistently higher yields in poor years and yields that are no worse than later-sown crops in good years," he said.

"Early sowing depends on the crop you are growing. Each crop and variety has a preferred sowing window that will give the highest potential yield. For mid-season wheat in most areas of SA this is generally between April 25 and May 15.

"Early-sown crops use moisture and nutrients from the soil very efficiently. When sowing early there are a range of management strategies that can be employed to optimise crop yield potential. Delayed application of nitrogen, lower seeding rates and use of plant growth regulators can all delay crop canopy development and save water for grain fill."

The relationship between the sowing date and crop development can interact with disease development and nutritional



BUREAU OF METEOROLOGY SENIOR CLIMATOLOGIST DARREN RAY.

management. Early sowing can increase the severity of diseases such as powdery mildew, Septoria tritici blotch and barley yellow dwarf virus (BYDV) in wheat.

“It used to be that we would aim to sow later to reduce crop canopy size and limit disease pressure,” he said. “Some growers prefer to sow later to get a pre-sowing weed knockdown. Others prefer to sow later into moisture, which also tends to be softer on machinery than dry sowing.

“However, sowing early allows your crop to better compete with weeds and generally, depending on the variety, allows it to mature before ryegrass, providing a window for crop-topping to prevent ryegrass seed set.

“I think that for early sowing you need to have low weed populations to start with and use of pre-emergent chemicals, as opposed to waiting for moisture to get a germination and weed knockdown.

“Weed reduction is generally achieved through rotations and different methods of weed control, especially if dry sowing is being practiced.

“Frost is also a consideration. Sowing early may increase the risk of frost during the crops reproductive phase. However, frosts can still severely damage later-sown crops,” he said.

Machinery requirements are another factor to consider when deciding time of sowing. Some seeders have characteristics such as low tine breakout pressures or excessive soil throw that work against their performance in dry soil conditions and farmers planning to sow early must have machinery that can sow into dry soils if necessary.

“Farmers intending to sow early may need to sow dry in heavy soils, so they must have machinery that is able to penetrate hard soil to sow the crop. This often favours machines set up to place seed and fertiliser at seed depth rather than deep-banding fertiliser, which requires greater working depth and often higher breakout pressures.

“Our research on medium-heavy soils has shown that early-sown crops also tend to benefit from lower seeding densities and later nitrogen applications. This means less nitrogen can be applied at seeding, which increases sowing efficiency by reducing the time spent filling fertiliser and seed boxes.

“Stubble handling tends to be easier

TRIALS PROVE SOWING EARLY REAPS REWARDS

Trials conducted at the Mid North High Rainfall Zone trail site on Pat and Mary Connell's place at Navan show that sowing wheat before the middle of May has produced the highest yields in most years.

Agricultural consultant Jeff Braun says even in the better-finishing seasons of 2009 to 2011, the yield from early-sown plots was at least equal to the yield of plots sown two weeks later at the end of May.

“When sown this early in the season, wheat yield has not declined with sowing densities as low as 100 plants/m² (40 kg/ha). In crops sown very early, at the end of April, yields have not declined at seeding densities down to 50 seeds/m² (20 kg/ha),” he said.

“Early-sown plots have generally responded best to later nitrogen applications and are also very efficient in producing grain from lower nitrogen rates due to their increased root expansion and scavenging of soil nitrogen.

“The trials have had a focus on crop canopy management, which is looking at strategies we can employ to best utilise available water for yield.”

when sowing early as the residue is dry and brittle and tends to flow through the machine better. When conditions are damp it is often necessary to burn the residue to enable a crop to be seeded into a cereal stubble.”

The ideal time to sow depends on the conditions in each paddock, the crop and climate, with experience often playing an important part in making the right decision, Jeff says.

“Often, the best way to determine when to sow is to look at your best-yielding crops from the past few seasons and establish when they were sown,” he said. “The value of past experience should not be under-estimated.”

For those wanting a more accurate, science-based analysis, the BCG (formerly Birchip Cropping Group), has Yield Prophet, an on-line decision-support tool

that can generate the optimum time of sowing for a given variety based on district weather data for the past 100 years.

“Yield Prophet, which is based on the APSIM model, allows growers to see which time of sowing gives the best yield outcomes. It can also generate a sowing opportunity report that allows a farmer to determine the likely yield outcomes for a range of sowing dates, with the risk of frost and heat shock in the background.”

For more information on:

- Yield Prophet - http://www.bcg.org.au/cb_pages/what_is_yield_prophet.php
- climate variably and seasonal outlooks - <http://www.bom.gov.au/climate/maps/>
- the current state of the climate influences - <http://www.bom.gov.au/climate/enso/>



RETAINING STUBBLE CAN HELP CONSERVE SUMMER MOISTURE SO CROPS HAVE MORE SUB-SOIL MOISTURE TO DRAW ON.