



Soil moisture is the main driver for early seeding decision-making for Wubin grower Boyd Carter.

Boyd farms 8,500ha east of Wubin with his parents, managing an enterprise mix of wheat, barley, canola, lupins, faba beans and serradella. They also trade sheep opportunistically to support their rotations. The Carters have been growing canola since 1996 and have increased the area cropped from 7% up to 15% in 2022. Early rainfall opportunities have been a big factor for the increase in canola plantings in their area, along with the influence of price.

In the last three years (2020-2022) Boyd has seeded canola in March, noting the advantages of warmer days on establishment if moisture is available. The decision around March seeding is typically made based on the forecast of rainfall and subsoil moisture.

“We want to get to four-leaf stage as soon as possible, as canola is pretty hardy

EARLY SOWN CANOLA GROWER CASE STUDY: BOYD CARTER

By Daenia Dundon, R&D Coordinator and
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SNAPSHOT

GROWER	Boyd Carter
LOCATION	Wubin, Western Australia
AVERAGE RAINFALL	280mm
FARM SIZE	8,500ha (east of Wubin)
ENTERPRISES	Wheat, barley, canola, lupins, faba beans, serradella and sheep
SOIL TYPES	Sandy loam to deep red loam

after that point. Warmer weather helps the plant get early vigour, which is an advantage of early sowing if you have the moisture.”

In 2022, the Carters didn't have significant summer rainfall totals, but received 20mm of rain in February, which coupled with subsoil moisture carryover from 2021 and a 10mm rainfall event in mid-March, was enough to trigger the start of their canola program. They started seeding at the end of March, and a week later received 20-40mm of rain from an ex-tropical cyclone system.

The Carters have learnt to trust their knowledge and experience to make early seeding decisions.

“In the past, the early stuff we have put in has performed well. We have also found if you don't go that early, you often still get the same or worse results, and it then allows the rest of the program to be sown in a timely manner too.”

“We have found yield is often impacted more by the heat stress at the end of the season, so going early sometimes provides more growing time.”

MANAGING EARLY SEEDING RISK

Managing risk in a farming business is challenging, particularly in the low-rainfall regions where Boyd farms. Boyd has employed two key strategies to manage the risk of seeding canola early.

Firstly, is the use of a 50:50 retained OP seed and pedigree TT seed mix on the paddocks that go in first. This reduces the up-front seed cost risk for the Carters.

To enable this strategy, they will always seed at least one paddock with 100% pedigree TT to ensure quality viable seed for the following year. Their retained seed is stored in a temperature-controlled air-tight sea container, which is set at a consistent 24°C. The canola program is then continued with a mix of Roundup Ready® varieties of different season lengths.

The second strategy Boyd uses is around machinery utilisation considerations for the different crop types. The Carters have two seeding bars and two boom sprayers.

While both are DBS seeding bars, they each have different seed boxes. The Simplicity seeding box can't achieve low seeding rates, so is used for their retained seed mix which goes out at the higher rate of 2.2-2.5kg/ha. The smaller Bourgault seed box is used for all other varieties as it can get down to 1.2 –

1.8 kg/ha. Boyd notes the importance of having two boom sprayers.

“It would be difficult to manage the early canola [with earlier post-emergent sprays] while seeding our cereal program. We have one boom sprayer completely dedicated to the canola program.”

WHEN THERE'S NO SUB SOIL MOISUTURE

If there is no sub-soil moisture from summer rains, the Carters will start seeding dry in mid-April. They will also consider changes to their program like reducing canola plantings if still dry at the end of April as they don't want to impact their cereal seeding program.

“Normally we want to finish our canola program by early/mid-May as after that you run the risk of impacting other parts of your cropping program.”

WHAT HAVE WE LEARNT

The Carters have learnt a lot about growing canola in the last five to ten years which has helped them increase their hectares grown. Some of the key learnings include understanding how canola and different varieties perform on different soil types, experimenting with rotations and using new technologies for weed control.

“We have always kept canola off our red ground as it has too much early vigour and dries out quickly with the clay content in the soil, leaving us with a big crop and no yield. However, some new varieties have the potential to handle it better, so we are trialling again in 2022. Our best canola results are on sand over gravel soil type.”

“We have also started growing canola on a lupin stubble, which is reducing some of the fertiliser inputs and helping with grass control by enabling a double break from cereals.”

Another way the Carters manage the risk of going early is to vary the depth of seed placement based on the conditions.

“We vary the seeding depth when sowing canola so as to not 'put all our eggs in one basket'. So, every third seeder run will either be shallower or deeper depending on the moisture position in the soil. We don't want the seed sitting just in the moisture, we either want it in dry or 50 mm into the moisture. This ensures we spread the risk and don't get total germination failure in a paddock, but it's still a work in progress.”

HARVEST

The 2022 season created challenges for the Carters

with harvesting their canola, resulting in them taking a different approach.

“Normally we swath our canola, however in 2022 we had to desiccate the canola and direct harvest it, which is not our normal practice. We were finding some areas were ready whilst others were still green with some individuals even re-shooting, potentially due to mice damage.”

Following harvest, the preferred variety is now Emu for RR and Trident for TT, as the Carters were most impressed with both the vigour and the yield of those varieties in 2022.

FUTURE PLANS

Going forward, the Carters will continue to manage their risk when making decisions regarding their canola program. Their plan will depend on whether a large early rainfall event occurs or if it is a marginal start to the year. For 2024, the current plan is to decrease the amount of canola sown, and seed it onto pasture paddocks, in order to minimise their susceptibility to cost-based risks.

“By sowing into pasture, there is likely to be more moisture available, but it also gives us a chance to make up the profit for the year it was out. Same with our soil amelioration operations; we generally get a better crop after ameliorating the soil, so to make that cost back, we try to sow canola onto those areas.”

The Carters will continue to use a 50:50 ratio of retained OP seed and pedigree TT seed to diminish their reliance on canola seed availability – a current issue many growers are facing. In terms of trialling new varieties, Boyd will await the results of the Canola NVT, which happens to be sown on his farm this year. The results will hopefully provide insight into which varieties handled the drier conditions best.

The NVT results as well as Liebe’s Early Sown Canola trial results, will aid growers in planning their canola programs whilst managing the risks associated with going early.

	Time of Sowing 1 (early)	Time of Sowing 2 (normal)
Paddock name	S5	C9
Variety	HyTTec® Trident	Hyola® Garrison XC
Sowing date	28 March 2022	5 April 2022
Rainfall at sowing	Better summer rainfall – likely 20mm more than C9	45mm
Comments (9 June 2022)	80% flowering	30% flowering
	Good germination	Good germination
	Sandy gravel	Red ground paddock
	More mice activity	
Comments (26 August 2022)	80% flower drop	90% flower drop
	Seems like it’s flowered three times	Most plants 0.8 to 1.5m tall
	Most plants between 0.8 and 1.3m tall	Best of the crop is where the Bednar was used
	Podding starts at about 12cm off the ground	Podding starts between 12cm and 15cm from the ground
		Dense podding
Nitrogen Applications	50L Flexi N early August	50L Flexi N early August
Yield	2t/ha	2.12t/ha



EARLY SOWN CANOLA GROWER CASE STUDY: DYLAN HIRSCH

By Daenia Dundon, R&D Coordinator and
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SNAPSHOT

GROWER	Dylan Hirsch
LOCATION	Latham, Western Australia
AVERAGE RAINFALL	290mm
FARM SIZE	5,800ha
ENTERPRISES	Wheat, canola, lupins and barley
SOIL TYPES	Sandy loam to deep red sand

For Latham grower Dylan Hirsch, canola was once just an occasional crop, but has now become a large and integral part of his rotation, representing on average 35% of their cropping program.

Dylan farms 5,800ha near Latham in WA's northeastern Wheatbelt with his family. Previously the family farming enterprise was a very cereal-dominated system, however, over the last 12 years, the Hirsch's have added and increased their canola program with 50% of their program going to canola in 2021.

They have also developed the confidence to sow canola earlier and earlier, and now ensure they have everything ready to go by 20th March if an opportunity arises. In the last three years, they have had canola in the ground in March and have had pleasing results more often than not.

Through this ongoing learning process over the last 12 years, the Hirsch's have been able to develop some very clear rules of thumb that support objective decision-making for seeding canola in their business.

Paddock and rotational planning are important in identifying the paddocks that will suit canola for that coming season, taking into account soil type and weed burden. Canola will always be seeded into a cereal stubble.

Their seeding decisions are based on soil moisture and rainfall targets. Dylan notes that from the 20th of March, “we want to see a 10mm minimum rain event, if we have had a minimum of 60mm summer rainfall to ensure sub-soil moisture. Otherwise, we need to have confidence in a 20-30mm rainfall event occurring.”

“I want to be seeding before that opening rain, but I want confidence in that forecast, especially if we don’t have sub-soil moisture. We will wait to be confident in forecasted rain, usually three days out, and then go hard seeding.”

Dylan uses a website that compiles various weather models, and if all the models agree on more than 10mm, he is confident to start seeding.

“Sowing early is a risky decision, but if everyone in the team knows the targets we want to hit, it’s easier to stick with a decision”.

IMPORTANCE OF UNDERSTANDING SUB-SOIL MOISTURE

Recording and mapping summer rainfall across different areas of their farm allows the Hirsch’s to have a clearer understanding of sub-soil moisture and use this when making seeding decisions.

In 2022, one area of their farm had over 120mm of summer rain, while other areas had none.

They are also involved in the Liebe Group Soil Moisture Probe and Weather Station Project, where they have installed two moisture probes and an automated weather station. Over the past two seasons, they have been learning how to interpret the data and use this information confidently.

TRUSTING THE TARGETS AND EXPERIENCE

Experience plays a huge part in on-farm decision-making. Speaking about how growing canola has changed for them over the last ten years, Dylan noted how hard it was to get their head around the cost of seeding and target seed rates at the beginning.

“It felt like an expensive investment, and one with a

lot of risk. But now we have confidence in growing canola, we have reduced our seeding rates a little bit in the last few years. Gravel and heavier soils average 1kg/ha, while sands are around 2kg/ha.”

In the last 10 years, another big attitudinal shift has occurred for the Hirsch’s. They now manage the risk of early sowing by displacing some of the cost risks around this. The main cost they have moved is their starting fertiliser.

“We are happy to try get seed in the ground ahead of the rain, and then we will apply fertiliser once established. Logistically and cost-wise it makes sense for us. We would rather invest in risking seed in front of a rain event and then getting nutrition on it later.”

“Sometimes we only get one or two chances to germinate canola in a timely window. We want to make sure if we get the opportunity, we take that, but if germination fails, we will come back and sow to cereal or turn to fallow. Hence why we don’t want to risk fertiliser costs up front.”

“Most of our canola goes in without fertiliser, with the exception being our rule of thumb that, if a paddock has a Cowell P below 30 then we will use starting P.”

OTHER CONSIDERATIONS FOR SEEDING EARLY

In terms of early sowing, there are some very well-suited varieties, however, seed supply issues in 2022 meant the Hirsch’s were just sowing what was available to them at the time. Being able to target seeding windows with the right varieties is their plan, however.

Seed depth is another consideration when seeding early. Dylan explained that they probably seed deeper than others would target with early seeding.

“We try to place the seed at 25-30mm to chase moisture and protect the seed from high temperatures, and in our experience, the deeper sown crops have come up better at this time. When we are seeding into cooler, moister soil we will bring this up to 10-15mm.”

Another reason to go early with canola is to avoid the heat stress at the end of the season. Dylan notes that if they can get canola flowering in July, rather than August, it won't be exposed to as much heat stress at the end of the season.

WHEN THERE ISNT EARLY SOWING OPPORTUNITIES



If the early seeding moisture and rainfall targets are not met, the Hirsch's will wait until the 20th April to dry seed canola and reduce their program to as low as 10%. Canola will then be replaced with a cereal in the rotation, or a chemical fallow depending on the paddock conditions (ie weed burden).

The Hirsch's also seed canola with a dedicated disc seeder at 600mm row spacing. By having one machine dedicated to canola, it enables them to manage logistics if and when cereals need seeding at the same time.

HARVEST

For the 2022 harvest, the Hirsch's experienced an uncommon challenge for their farming area, resulting in a slight change of practice.

“The late-season rain meant we had patches of sandplain that stayed quite green, which we don't have too often! We actually had to do a bit of moisture management when harvesting to blend it with some dry canola to get it off in time.”

	Time of Sowing 1 (early)	Time of Sowing 2 (normal)
Paddock name	G16	G12
Variety	InVigor® R 4022P	Nuseed® Emu TF
Sowing date	2 April 2022 (two days after rainfall, 30mm deep, onto stripper stubble)	10 May 2022 (seeded dry, 15mm deep, before 10mm rain, draper stubble)
Rainfall at sowing	76mm	119mm
Comments (26 May 2022)	Better than expected emergence – about 65-80% germination	Seems to have come up OK
	Currently at 8-leaf stage – vegetative	Currently at cotyledon to 1-leaf stage
Comments (29 July 2022)	Crop went through a couple periods of moisture stress prior to June and July rains. However, now looks good and is in full flower. Has had 80 units of nitrogen. Medium levels of DBM in crop, which is common for early sown canola for us.	Has just started flowering, which is pleasing. Has had less nitrogen (40 units) than G16 due to perceived lower yield potential. Cabbages not as big as G16 but has just filled in between rows.
Photos taken 29 July 2022		
Yield	1.55t/ha	1.15t/ha

Apart from that, the Hirsch's harvest was relatively smooth sailing, aided by having multiple different varieties allowing for a manageable harvest plan.

"We had a fair balance of 4022P Pod-Guard variety in, which made it easier in that we weren't rushing to get through our canola program before we experienced shattering."

"We were then able to prioritise our high-risk shattering varieties such as Hyola 410XX first, followed by Battalion XC and Garrison XC and then finished off with Emu, 44Y30 and lastly 4022P."

Dylan observed no major differences between the varieties, but rather any differences were related to nutrition, paddock history and/or time of sowing. He noted this observation was also seen in Liebe Groups' Early Sown Canola trial in 2022.

PLANS FOR THE FUTURE

The Hirsch's will continue to sow early if the opportunities arise, however, it will all depend on summer rainfall and how prepared they are.

"Until we see how much summer rain we have over harvest, January and February, that will determine how bullish we will be with our canola program."

In terms of new varieties, the Hirsch's are keen to try an Opti-gly variety as well as a new XC Canola variety from Pacific Seeds on their newer country which has tolerance of imi-chemistry and group B residues.

Going forward, one area that Dylan is keen to investigate is the role of early season fertiliser in canola, in terms of fertiliser toxicity, potentially looking at different placements and/or types. But for now, the Hirsch's will continue their standard practice of fertilising their canola program post-emergence.

"The data from the Early Sown Canola trial backs up what we are seeing anecdotally on farm; which is that time of sowing is more important than variety selection for our region."

The Liebe Group growers identified a lack of data in sowing canola before mid-April in the north-eastern grain growing region of Western Australia.

To address these concerns, GRDC invested in a two-year 'NGN risk and reward of very early canola' project to help growers better understand the risk and reward of sowing canola early and the decision-making process and logistical challenges with sowing times and varietal choice.

As part of the project, trials were set up in 2022 and three growers (Mike Dodd, Dylan Hirsch and Boyd Carter) recorded their trial results.

