

Right time for triticale?

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Triticale lost favour with many Australian growers almost a decade ago, but its ability to produce biomass and grain in tough conditions could see it re-emerge as a viable option for dryland farmers.

Triticale grain production was dealt a major blow when Viterra stopped accepting the crop in 2010.

Growers with storage facilities and easy access to feed mills and other markets continue to include it in their rotation, but long-time triticale breeder and advocate Dr Kath Cooper says it's now somewhat of an underground operation, although mainstream seed companies do have triticale seed available and GRDC fact sheets on its attributes and how to grow it are readily available.

"Some farmers will say, 'I'm going to keep growing triticale because I've got markets, but I don't like telling anyone about them as I don't want to compete with anyone else and lose that market', so it's a bit of a secret industry," she said. "But many people who buy seed from us say they can't produce enough triticale grain or forage to meet the demand."

A triticale enthusiast for more than 35 years, Kath and her partner Mike Elleway own a 515ha farm at Sherlock in the SA Mallee. The property, on which they produce certified seed for sale to growers throughout Australia, is also home to a triticale breeding facility, a self-funded research operation in which Kath is continuing to develop new varieties.

From 1982 to 2004 she worked as a researcher in the University of Adelaide's crop breeding program, undertaking triticale breeding and associated research to support development of markets for the grain.

She met Mike, a Cowell farmer who had seen the resilience of triticale first-hand, at a recreational cycling event.

"Mike says there were seasons on his family's farm when triticale was the only crop worth harvesting," she said. "He wanted to help progress triticale because it had helped his family. He assisted me with trials and promotion of triticale on Eyre Peninsula, got a research position at the University of Adelaide and eventually worked with me on the triticale program. We would both like to see the crop stick around and progress."



KATH COOPER CHECKING THE PERFORMANCE OF TRITICALE LINES AND VARIETIES IN HER TRIAL PLOTS ON THE SHERLOCK PROPERTY SHE RUNS WITH PARTNER MIKE ELLEWAY.

Despite what she perceives as a lack of industry support for triticale, Kath believes triticale's resilience in drought conditions could see renewed interest in 'this currently undervalued crop'.

"If the season is tough, triticale will still produce something," said Kath, who grew a triticale crop at Sherlock last year on 154mm of growing season rainfall. "We had hardly any subsoil moisture because that was the second year of drought. It was amazing." A 5mm rain event at heading provided enough moisture to fill grain on the thin triticale crop but all their legume crops failed. "We got absolutely not a single grain off any legume, but that was partly due to frost too."

Kath and Mike recently had a NSW grower looking for crops able to handle the drought conditions in his district drive across from Forbes to enquire about triticale. "He said, 'we can't grow canola and have thousands of hectares of wheat dying around us, so we want to go back to trit'."

Triticale, developed by crossing wheat and

rye, will thrive in high-moisture conditions but has several characteristics that make it a good fit for drought-prone regions, Kath said. These include tolerance and resistance to root disease, the ability to grow and produce a saleable crop on relatively poor soil conditions and potential for erosion control.

"It's got a deep, aggressive root system that holds the soil together and prevents erosion, so it definitely reduces the amount of dust blowing, which we've seen too much of during the past couple of years," said Kath. Its extensive and vigorous root system also delivers good disease tolerance because any root pruning due to disease is offset by the number of healthy roots. Some varieties have an absolute resistance to cereal cyst nematode (CCN), which can be beneficial for following crops in the rotation where CCN is an issue. "You can clean up CCN by growing a triticale variety that hosts zero cysts for two successive seasons," she said.

There are also ongoing soil health benefits

CROP OPTION

to be gained from tritcale recycling nutrients from sub-soil layers and later providing a source of organic matter for soil biota. “The big root systems can get down to deep soil moisture, which we’ve certainly seen in our sandy conditions,” said Kath. “It must also access nutrients from deeper down and then, when the crop’s finished, the roots are left in the soil for the soil biology to live on. We believe we have improved the productivity of our poor soil with repeated seasons of tritcale growing.

“Another interesting tritcale characteristic is that it alters the pH in the soil around its roots. It’s tolerant of acid and alkaline soil and can amend the root zone pH to make better use of trace elements and phosphorus. That has to make the soil better for subsequent crops.”

She knows of NSW growers who favour tritcale for its ability to amend or tolerate low soil pH, which means they can avoid the cost of liming.

It can be grown with low nutrient inputs, making it an option for lower-yielding areas – “many growers tell us tritcale is their best-returning crop when considering how much cost and effort they put into it” – and, with tritcale showing tolerance to Russian Wheat Aphid and providing strong competition to weeds, growers are also likely to save on herbicides and pesticides, she said.

“An influx of Russian Wheat Aphid at Sherlock in the past few years has severely reduced our wheat yields but had no obvious impact on our tritcale yields.”

Tritcale grain has a variety of uses



WHEN CONDITIONS ARE RIGHT TRITCALE CAN PRODUCE A LOT OF BIOMASS, AS EVIDENCED BY THIS 2016 CROP BEING CUT FOR HAY ON KATH AND MIKE’S PROPERTY IN THE SA MALLEE.

including baking and craft brewing but its ability to produce large amounts of biomass is currently a major selling point, with most of the seed Kath and Mike sell bought by mixed enterprise farmers growing the cereal for forage crops.

“Tritcale is a good producer of high quality, highly palatable forage if you grow and conserve it properly,” said Kath. “It recovers well after grazing and produces more biomass than many other cereal and legume varieties, particularly in drought conditions. The interest in growing tritcale for forage has definitely increased in the past decade.”

This trend may continue with her development of Wonambi, a long-season variety being marketed by Naracoorte Seeds.

“We wanted someone else to market Wonambi as it’s really too long-season for our low-rainfall farm, although it hurries up if it has to. It seems to produce lovely dense grain and achieve yields similar to anything else in a short, dry season.”

Naracoorte Seeds were very happy with how Wonambi performed in their trials last year, when it tillered well after heavy grazing, and have included it again this year, she said. “We’ll see how it goes this wetter, cooler winter.”

Kath selected Wonambi for its high test weight and vitreous smooth grain but it is also suitable for forage, with long stems and reduced awns making it palatable for livestock.

Rufus, a variety bred with the support of two universities and GRDC research funds prior to 2004, was Kath’s first forage tritcale release and remains her best seller for the stockfeed market. “Rufus really advanced the acceptance of tritcale for hay because of its long straw and softer heads with a low degree of awning, coupled with cereal cyst nematode resistance,” she said.

Kath believes mixed enterprise growers in drier farming regions could benefit from growing tritcale instead of rye, which has



MIKE ELLEWAY AT THE FRONT END OF THE SEEDING RIG USED TO PLANT KATH AND MIKE’S COMMERCIAL CROPS.

fewer market uses. “Growers in low rainfall regions use rye quite a lot. It has an even bigger root system and produces even more straw than triticale but is used for little other than baking bread.

“I’d say if you’re growing rye, have a look at some of the more recent triticale varieties selected on our drought-prone farm, which are considerably better for livestock feed than cereal rye. Goanna, for example, has good grain quality and produced the best grain yields on our farm last season.

“Yowie has a little longer growing season than Goanna but still has some drought tolerance. We think its really big root system enables it to access moisture from depth and it seems to go into dormancy during dry periods then come back when conditions allow. I’m sure different varieties escape or deal with drought in different ways, but without research into drought tolerance mechanisms we are stuck with anecdotal reports and guesses as to the mechanisms at play.

“I talk about triticale being good for drought conditions and being economic on lower inputs because that is what we see on our farm, but it prefers more rainfall and higher inputs and the more you put into this crop, the more it will return.”

Kath believes triticale can help growers maintain productivity in the face of climate change but says everyone needs to ‘do something to limit climate change and not just assume that farmers have to adapt’.

“You need some rainfall to get crop growth; you can’t grow it on fresh air. Biological systems can only cope with so



LOADING THE TRUCK OF A NSW GROWER WHO DROVE TO KATH AND MIKE’S PROPERTY TO BUY 10 TONNES OF TRITICALE SEED HE HOPES WILL MAKE HIS FARMING SYSTEM MORE RESILIENT IN THE FACE OF DRY CONDITIONS DURING THE GROWING SEASON.

much and enzymes will only operate in a certain temperature range, so if we get too hot then things are not going to work.”

Triticale copes well with frost when in vegetative growth stages but, like other cereals, is susceptible to frost damage at heading, with the extent of damage depending on the duration and severity of the frost.

Kath has dedicated most of her career to progressing triticale as a crop option and there is no sign of her determination abating. “I’ve had a lot of experience with it and I think it’s a great crop. It’s simple to grow and very rewarding. It gets under your skin really. I’d be happy if other researchers and companies were funded to take it on and then I wouldn’t feel compelled to put so much effort into it,

but at the moment it keeps me actively engaged in purposeful work, and even provides some fun.”

She is also buoyed by recent interest in the grain. “In August we had some last-minute orders from seed companies which cleaned out our stock, so triticale is still in demand.”

In an average year they produce 20 to 50 tonnes of each of their six triticale varieties, but last year the tough seasonal conditions reduced their production to about 12t of each variety.

Kath is frequently asked to present at Triticale Symposia around the world and in 2017 was awarded the prestigious David Roget Mallee Sustainable Farming Excellence Award in recognition of her contribution to the development, adoption, research and marketing support of triticale.

She still sees frontiers for the grain to conquer; particularly its acceptance for human consumption.

Kath has enjoyed eating food made with wholemeal triticale for more than 30 years and believes it has potential in health food markets in particular, since it is higher in fibre than wholemeal wheat. It also has what she describes as a pleasant mouthfeel and delicious slightly sweet and fragrant flavour.

“I live in hope that triticale wholemeal will make it in the food industry. If it had more visibility in the food industry the crop would have more stature within the general population and research community. I’ll keep battling on that front.”

MIXED COVER CROPS

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