

*Don't rule out burning as an effective management tool, particularly with windrow burning rather than whole paddock burning. It is a great opportunity for farmers and current thinking is that you're unlikely to be struck down by a bolt from above just because you burn occasionally!*

## A Burning Question - Is Never Say Never Appropriate?

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We are all aware of the tremendous benefits that have resulted from retaining stubble. Our soils have more organic matter on the surface, are more friable and retain water better. This organic matter provides the soil with protection against wind and water erosion. The surface cover helps us to get crops up and going in marginal moisture conditions. This has contributed to huge improvements in crop establishment, vigour and yield over the last thirty years.



Photo by Alex MacLean

The problem is that we have become so paranoid about burning, even when presented with good reasons to do so, that many growers will still refuse to burn stubble at any cost. There is almost a stigma attached to burning these days.

Bill Long of Ag Consulting Co says that, like anything in agriculture, it is really a matter of finding a balance. "There are ways of burning stubble that mean you can still provide a good amount of surface cover to achieve all the benefits that we know are evident as a result of retaining stubble but that can also give us all the benefits we know are available through the use of fire. We also know that we can minimize the risks of burning whole paddocks by using effective techniques to burn only windrows and chaff dumps."

### Managing weed seed and snails with windrow burns in canola or lentils

In fact, windrow burning to manage weed seeds is more effective than whole paddock burning. Windrow burning for ryegrass and radish, for example, is where you concentrate the chaff out of the back of the header and then burn that windrow. The temperature in the burning windrow is higher than the temperature you will achieve in a whole paddock burn because there is more material there. That means you don't need the same length of burn. In ten seconds of burning, temperatures in the order of 500 degrees C can be achieved in a windrow. A standing stubble burn might only reach temperatures of around 400 degrees C.

That temperature difference and duration of burn can be really important in terms of the level of control you



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can achieve for ryegrass and broadleaf weeds like radish, for example. So, longer burn times and higher temperatures are achievable in windrow burns but the trick is containing the fire to the windrows and leaving most of the stubble cover on the paddock. This is much easier to achieve with crop stubbles from canola and lentils, for example, than cereals because there is not as much material between those windrows.

Bill Long says, "When windrows are burned effectively you can retain up to 90% of the soil cover and the benefits associated with that but still get the benefits of weed and snail control."

### More difficult but still possible in cereals

Getting an effective windrow burn in cereal stubbles is certainly more difficult but experienced farmers who are able to take advantage of ideal conditions when they occur in late autumn have achieved some excellent results.

Humidity, wind speed and wind direction are all factors which will determine the effectiveness of the burn in the windrows and whether or not the fire will cross the windrows and damage the remaining stubble between them. It is beyond the scope of this article to give a formula for how to do this but with care it can be done.

Managing stubbles from harvest onwards can make this job easier. If you are able to, for example, chop the paddock very low after harvest and maybe even put the stubble through the header a second time it will help break the straw down into a chaff fraction. If you have some reasonable summer and autumn rain, high levels of stubble can break down to the point where there is probably not enough material in the inter-row to carry a fire. It is fair to say that it takes some skills, it takes the right conditions and it doesn't always work.

Initial stubble loads are important here. If you are dealing with a 2-t/ha crop that hasn't produced a lot of stubble and you manage that stubble by slashing or putting it through the header chopper again there is not a lot of material left in the windrows. The likelihood of fire crossing those windrows isn't that high.

If you are dealing with a 5-t/ha crop with an 8-t/ha stubble load you have a much harder job ahead of you. But having said that, Bill Long believes that it is still worth trying to achieve stubble breakdown between the windrows. "Even if you end up with a full paddock burn just prior to planting in late April early May before going into a cereal, that can still be acceptable. Farmers may still be able to achieve a very good level of weed and pest control while reducing that exposure gap between burning and planting a crop. It can reduce that exposure down to less than a month or so, if you leave burning till quite late."

### Just how effective is windrow burning on weeds seeds and snails?

Burning to control snails is very, very effective as snails are quite likely to be concentrated on the highest points in a windrow. Bill Long reports instances of up to 100% control of snails with this very effective technique.

*"In the case of weeds you may expect something like 85% control of ryegrass seed in a windrow burn and perhaps a little less, say 75%, in a standing stubble burn. Radish control varies from 70-80% depending on the technique used and the duration and intensity of the heat in the fire created. Again, windrow burns create more heat so expect a better job."*

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### What about chaff dumps?

Burning chaff dumps can also be highly effective with weed control levels often between 90-100%. Chaff dumps give a very intense burn and the fire can be more easily managed than in windrows.

One of the problems with chaff dumps is that under most of the existing systems the chaff fraction is quite fine. Dumps take longer to burn and often you have to let them burn right out. Some regional councils have restrictions requiring fires to be out before 9pm and in some instances that can create a lot of stress for farmers.

Provided farmers are prepared to monitor burning chaff heaps well at a busy time around the start of seeding they can be a very effective weed and pest control method. It's important to check with the local council so you know their expectations.

### To sum up...

Bill Long says, *"a judicious but occasional burn done carefully keeps a lot of weeds and pests under control in the long term. We know that some growers who burn every 3-4 years don't seem to have the weed and snail problems that others who don't burn are experiencing."*

*"My message is don't throw the baby out with the bathwater! Burning has been around since agriculture began and it is a very effective tool to manage weeds and pests. Used carefully, we don't need to expose ourselves to the damage that careless, blanket burning can cause. Just think about the burning impact, the crop type you are growing and the importance of that cover to get the next crop established. Every now and then there maybe an occasion where you can burn a paddock without putting it at risk and achieve some very cheap management of weeds and pests."*

Here's a great video from Doug Smith of Pingrup, WA on windrow burning:  
[http://www.youtube.com/watch?v=Hp\\_3tAI-VZY](http://www.youtube.com/watch?v=Hp_3tAI-VZY)

