

The ‘Long Game’ of Creating More Forage After Row Crops – Fall Rye

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Extra Forage in Cropping Systems

In 2016 and since, I’ve spent some time extolling the virtues of oats after winter wheat as a means to produce emergency forage, or more forage in general. This was a critical strategy in 2012 and 2016 for some producers facing shortage and was documented in volume 15, issue 50 of Virtual Beef in July of 2016 <http://www.omafra.gov.on.ca/english/livestock/beef/news/vbn0716a1.htm> and elsewhere. It featured the work led by Dr. Bill Deen of the University Of Guelph, with yours truly on the team.

With my focus on double-cropping as an emergency strategy, I have not spent enough time on how to produce even **MORE** forage, if a Fall or Winter crisis is not the immediate threat. It involves Fall-seeded, winter cereal silage and the data comes from the same body of work led by Dr. Deen.

Fall-Seeded, Spring-Harvested Cereals Overlooked?

Table 1 details the results comparing Fall-seeded winter wheat, fall (cereal) rye, and two varieties of triticale in their ability to produce forage as measured in each dry matter yield, and digestible energy (as TDN) the next Spring. This data was produced across a number of locations over 2013-2014 and 2014-2015. What it shows, is that if early harvest is desired (by June 1 or so) rye is a clear winner. The other species can catch up to, or surpass, the Fall rye yield but it takes two extra weeks to make this same physiological maturity (head). So, really the rye advantage is a **TIME** advantage more so than yield per se compared to these other 3 crop types. If the cover crop follows corn silage then it will enable soybean or a similarly timed crop to follow in the rotation.

Table 1. Average tonnes (T) yield in dry matter, total digestible nutrient (TDN) content and the stage of development of spring harvested cereals on similar harvest dates at research station trials (2013-2015). Fertilizer N rate applied was 50 kg-N/ha. (Adapted from Deen et al., unpublished 2016).

Rye Stage		Average Date	Dry Yield - tonne/ha -	Total Digestible Nutrients (TDN)	
Crop	Crop Stage			Energy Content - % -	Energy Yield Harvested - tonne/ha -
All Head					
Rye	Head	June 3	4.0 ^c	69 ^a	2.7 ^b
Triticale (Fridge)	Head	June 16	4.8 ^{ab}	63 ^c	3.0 ^{a,b}
Triticale (Pika)	Head	June 16	5.2 ^a	65 ^{b,c}	3.3 ^a
Wheat	Head	June 16	4.3 ^{bc}	68 ^{a,b}	2.9 ^b
Rye Head					
Rye	Head	June 3	4.0 ^a	69 ^b	2.7 ^a
Triticale (Fridge)	Boot	June 5	2.7 ^b	76 ^a	2.0 ^b

Triticale (Pika)	Boot	June 5	2.9 ^b	76 ^a	2.2 ^b
Wheat	Boot	June 6	2.6 ^b	78 ^a	2.0 ^b
Rye Boot					
Rye	Boot	May 29	3.0 ^a	74 ^b	2.2 ^a
Triticale (Fridge)	Flag	May 31	2.0 ^b	79 ^a	1.5 ^b
Triticale (Pika)	Flag	May 31	2.3 ^{a,b}	78 ^{a,b}	1.7 ^{a,b}
Wheat	Flag	June 1	1.9 ^b	77 ^{a,b}	1.4 ^b

Note: Results for dry yields, energy content and energy yields with differing superscripts and different fill colour are statistically different.

The other comparison we should consider in choosing Fall versus Spring harvest is the same data you might have seen in that older VB article, used here again and given in Table 2 or some of my slide decks on the meeting circuit. What it shows (and I have failed to *emphasize!*) is that a spring cereal (oats) taken in a Fall harvest produces less total forage, and also does not have the soil coverage benefits of the living Fall-seeded, winter cereals. The one concern is that with Spring-harvested there is a risk of reduced yield of the subsequent crop, which would offset the yield advantage. This risk does not exist with fall harvested crops. The inputs and outputs of the Fall versus Spring harvest are given in Table 3 to explicitly contrast the leading scenario for each period according to the data collected.

Table 2. Spring cereal crop variety and seeding rate effects on average yield and TDN content harvested in late October (flag-boot stage) with 50 kg-N/ha at the Elora and Woodstock research station trials that evaluated fall harvested cereals in 2013 and 2014 (*Adapted from Deen et al., unpublished 2016*).

Crop	Dry Yield - tonne/ha -	Total Digestible Nutrients (TDN)	
		Energy Content %	Energy Yield Harvested - tonne/ha -
Barley	1.2 ^b	76.6 ^a	0.9 ^b
Oats (120 kg/ha)	2.4 ^a	74.4 ^a	1.8 ^a
Oats (80 kg/ha)	2.3 ^a	74.3 ^a	1.8 ^a
Oats + Peas	2.2 ^a	74.8 ^a	1.6 ^a
<i>se</i> ⁺⁺	0.22	8.9	160.3

Note: Results for dry yields, energy content and energy yields with differing superscripts and different fill colour are statistically different.

Table 3. Comparison of Summer-seeded oats and Fall-seeded cereal rye forages with respect to inputs and yields as adapted from Deen *et al* body of work

	Oats	Cereal Rye
Seeding Date	August 15	October 1
Harvest Date (adapted)	October 31	May 29 (<i>next year</i>)
Harvest stage	Flag-boot	Boot
Yield (DM tonnes/ha)	2.3	3.0
TDN Yield (DM tonnes/ha)	1.8	2.2
Seeding rate	80 kg/ha	170 kg/ha
Fertility applied	50 kg N per ha	50 kg N per ha

‘Sow What’?

The bottom line is this.... If you don't need the feed in the Fall or Winter to make up a critical shortfall in feed, and you are willing to risk replant timing, you might find that a Fall-seeded, Spring-harvested fall (cereal) rye forage is the higher yielding forage crop and could be better timed to consider as a double-crop. Being strategic, the choice will depend on timing of the feed needed, and that later may be better!