

Harvesting Winter Annual Forages for Dairy

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Winter annual crops planted the previous late summer to autumn can be sources of highly digestible fiber in dairy rations. These crops include winter rye, winter wheat, winter triticale, barley and Italian ryegrass. Forage yield and nutritive value changes rapidly in the spring as these crops mature (see Table 1). Multiple harvests will be possible with Italian ryegrass. Yield and quality of these crops are inversely related, so the appropriate compromise between yield and nutritional value should be based on nutritional requirements of animals to be fed and forage inventory needs.

For lactating dairy cows, harvest these forages when neutral detergent fiber (NDF) is less than 55%. To achieve this, cereal rye should be harvested no later than the boot stage (less than 25% of the field has visible heads) and preferably in the pre-boot stage. Winter triticale should also be harvested in the boot stage. Triticale seed heads are unpalatable and may reduce intake, especially when fed as dry hay. Harvest Italian ryegrass in the late vegetative to early boot stage. Wheat and barley can be harvested in the boot to milk stages.

When forage will be fed exclusively to dry dairy cows and heifers, rye should be harvested in the boot stage, triticale in the milk stage, and wheat and barley in the dough stage, and Italian ryegrass can be in heading stages. Intake is not as critical for dry cows and heifers and delaying harvest increases yields.

Chopping and ensiling or wet wrapping bales are the best mechanical harvest alternatives for these crops, especially considering the short weather windows during spring in Ohio. Field wilting will be necessary before ensiling or wet wrapping bales. Ideally, silage/haylage should be left undisturbed for at least two weeks to allow the forage to reach stable fermentation. If forage is needed sooner, store some forage in silage bags or wet wrapped bales for feeding until the silage in bunkers is fully fermented.

Before feeding, obtain a forage nutritive value lab test and balance the diet based on the lab results. Grass forages harvested in the boot or milk stages can support more than 80 lb/day of milk when fed in properly balanced diets containing less than 22% forage NDF concentrations in the diet. Diets based on cereal forage harvested in milk stage require more concentrate supplementation (energy) than corn silage-based diets. Alfalfa-based diets and diets based on cereal forages (milk stage) require about the same amount of supplemental energy. Protein supplementation should be based on the forage test. Some research suggests that cows fed diets based on cereal forage respond well to rumen undegradable protein (bypass protein). Mineral supplementation should be based on the forage test.

Grasses typically will luxury consume potassium unless soil potassium levels are low. High levels of potassium in forages can be a problem, especially for dry cows. The high potassium inhibits absorption of magnesium, so the concentration of magnesium in diets based on grass with high potassium concentrations needs to be increased to between 0.3 (lactating cow) to 0.4% (dry cows) of diet dry matter. High potassium diets fed to dry cows increase risk of milk fever which can only be mitigated by either feeding lower potassium forages or feeding supplemental dietary anions to reduce the cation anion difference. Consult a



nutritionist to come up with appropriate supplementation. When grazing cereal forages or Italian ryegrass, supplement lush spring pastures with high-magnesium mineral blocks or mineral-salt mixes to reduce risk of grass tetany.

Baled cereal forage often has a very large particle size, so consider ways to reduce the particle size before feeding. Whenever possible, baleage from these forages should be made with a baler that has a cutter option. This improves bale density and fermentation along with feed out. When fed free choice using a hay ring, these long particles often result in increased waste. Processing these forages can improve digestibility. If not cut at the baler, a tub grinder or vertical mixer can work well to decrease particle size. The ideal particle size for most heifer and dry cow diets is a maximum of 5 inches in length.



Bottom Line:

Winter annual forages harvested from late vegetative to pre-heading stages of growth can provide forage with highly digestible fiber to lactating cows. These forages should be tested and incorporated into dairy rations based on the lab results. When fed to dry cows, these forages can be harvested at later stages of growth to achieve higher yields.

Table 1. Winter annual forage characteristics.

Forage crop	Dry matter yield (ton/acre)	CP (%)	NDF (%)
Winter rye	2 to 4 in spring	10 to 18	51 to 65
Winter wheat	2 to 4 in spring	10 to 18	50 to 65
Winter triticale	2 to 4 in spring	10 to 18	50 to 65
Italian ryegrass	3 to 6 multiple cuts	11 to 19	50 to 65

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