



## Harvesting Small Grains

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As farmers in northwestern NY prepare to combine their wheat, barley, rye, triticale, oats, and other small grains in the coming weeks it's important to review the best management practices for harvest timing, reducing harvest losses, increasing dry down, and preventing fires.

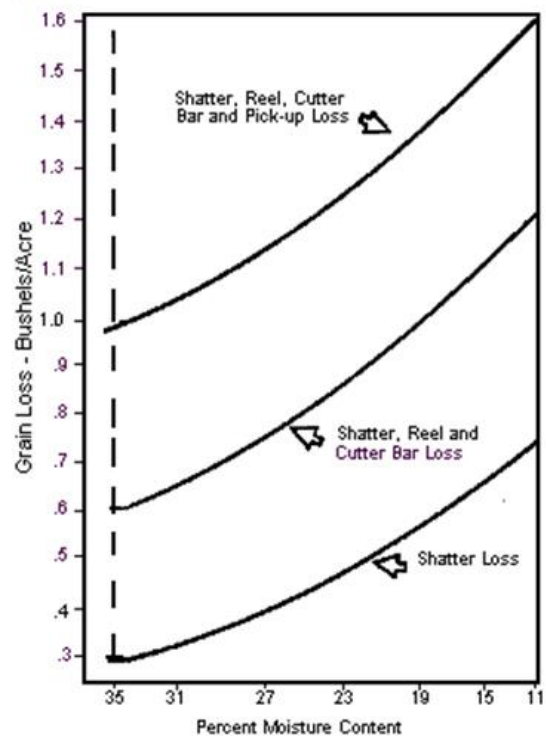
### Harvest Timing

Generally winter small grains are harvested during the first part of July and spring small grains are harvested in late July to early August in northwestern NY. Unlike some areas of the Midwest and the Great Plains, farmers in the Northeast must contend with frequent rains during the small grain harvest season. Harvesting small grains at higher moisture levels reduces yield losses (*Figure 1*), pre-harvest sprouting, and test weight losses. It also reduces the wrinkling of kernels which occurs if small grains are left to dry in the field due to wetting and drying from late summer rains. However early harvest comes at the cost of additional drying operations in order to get small grains to desirable moisture levels (<12-13%) in storage. With specialty crops like malting barley it is essentially a requirement to harvest early in order to protect the quality required by the malt houses.

### Reducing Harvest Losses & Increasing Dry Down

Small grains can be lost during many stages of harvesting. They may not enter the combine, shatter in the field or during windrowing (aka swathing), during windrow pick or direct combining operations, or during the threshing, separating and cleaning operations within the combine. If using windrows, this operation needs to be done when the grain is 20% to 35% moisture to prevent grain loss. Swathing allows for harvesting 3

Figure 1: Small Grain Harvest Losses Increase as Moisture Decreases



Source: [Minnesota Association of Wheat Growers](http://www.minnassoc.org/)

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Figure 2: Wheat Before (left) and At Physiological Maturity (right)



Source: [University of Minnesota](http://www.umn.edu)

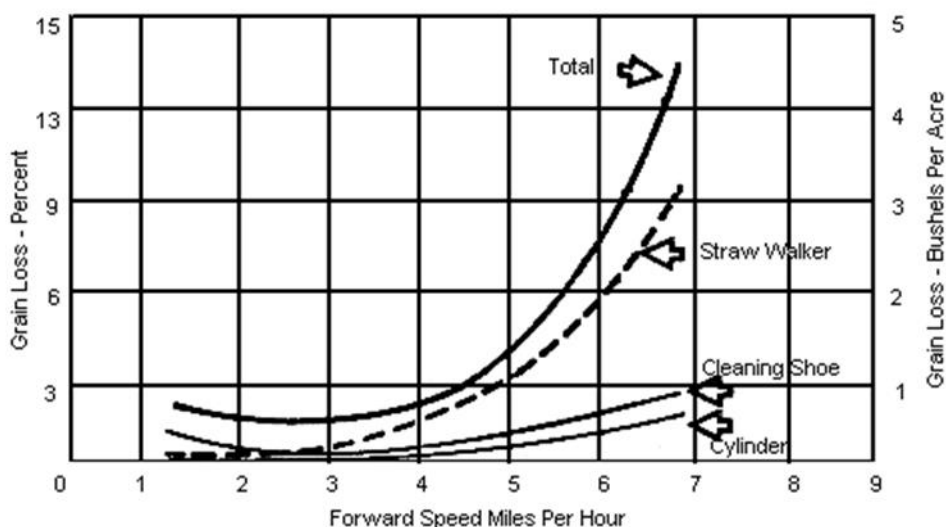
to 5 days earlier than direct combining due to uniform drying in the windrow. Work from North Dakota has shown that small grains at 35% moisture are yellow with no “milk” visible when the grains are crushed. For proper windrowing keep the reel speed slightly faster than ground speed and the reel centerline 6-10 inches forward of the cutterbar. Run the bottom of a fixed bat reel just below the small grain head height. A proper windrow will have small grain heads spread out evenly along the top with some crisscrossing of the straw.

Some farmers in the Midwest and Ontario spray their wheat with glyphosate prior to harvest to try to increase dry down speed or kill late emerging weeds. There is usual little drying increase from glyphosate pre harvest applications compared to not spraying and it requires delaying harvest for 7 days. Do not apply pre harvest glyphosate to wheat until the least

mature area of the field reaches physiological maturity (Figure 2)-the hard dough stage-and has dried to at least 30% moisture. For feed barley 20% moisture or drier is required. **DO NOT** spray glyphosate or paraquat onto malting barley as germination will be reduced, especially in wet years.

Properly adjusting and operating the combine goes a long way to improve the quality and cleanliness of small grains while minimizing harvest losses. Slowing down the ground speed reduces small grain harvest losses from the combine (Figure 3). The operator’s manual is the best place to start so make sure to pull it out and review the adjustment settings prior to starting combining. Be sure to adjust the combine as needed in the field and get out of the machine to check what is being blown out the back end with the straw. For every 10-20 kernel per square foot left on the ground about 1 bu/acre is lost for most small grains. To calculate per acre losses see

Figure 3: Small Grain Harvest Losses Increase as Speed Increases



Source: [Minnesota Association of Wheat Growers](http://www.mnagrowers.org)

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the “Measurement of Harvest Losses” section at this webpage from the [Minnesota Association of Wheat Growers](#). To better remove the awns (aka “beards”) close the de-awning plates over the screen and/or add a de-awing bar to harvest cleaner wheat and barley. Some combines have extended concaves that may also improve grain threshing without the use of de-awning plates or bars. If picking up a windrow, be sure to match the pick-up speed to ground speed. As combine speeds increase above 3 mph, losses from the cylinder, cleaning shoe, and straw walker increase rapidly. Additional adjustments to the fan speed, threshing mechanism, sieve and concave openings, and cylinder speed are all necessary to maximize harvest efficiency and minimize grain loss. With best management practices small grain losses during harvest will be a minimum of 2-3%, but can be much higher with poor management. Even with the recommended adjustments, losses of over 20% can occur if the combine is overloaded as the straw walkers are not as well suited to separate the grain compared to the sieve. Be sure to pay attention to the shaft monitors. If the lights or buzzers go off, the shaft speeds have dropped so stop and get out of the cab to check out the problem. When harvesting drier small grains slow down cylinder speeds and decrease the air speed to prevent kernel cracking.

### Preventing Fires

If there are high temperatures and high wind speeds during small grain harvest the chance of fire is much higher. The last thing anyone needs is a combine or field fire so make sure to:

**Keep your equipment clean:** Fires cannot burn without fuel. Leaf blowers are great way to quickly get rid of residue between loads. Wipe off any extra grease. Make sure the air flow kit is working (put one in the combine if you don’t already have one).

**Keep the exhaust system maintained:** Older belts, chains, and bearings create heat from friction and can light the straw on fire.

**Keep two fire extinguishers in the combine & carry a cell phone/radio:** If a fire does break out it’s best to have one fire extinguisher in the cab and another on the outside near ground level. Replace or maintain them yearly. If a fire is beyond your control get out and call for help.

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