Improving Profitability by Utilizing Forage Equipment More Efficiently: A Windrow Merger Example

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This article revisits windrow merger economics and explores how much the costs and returns actually vary with acreage harvested. Adding any new machine, such as a windrow merger, clearly increases capital investment, annual ownership and operating costs. Whether the mergers availability will increase net returns after covering those costs depends on the specifics of the farm situation. This article examines a situation with 100 acres to harvest assuming weather and farm labor permit chopping 7.5 hours/day. This makes for a few fairly long days but allows the crop to be put up within a 4-day window, optimum for filling a bunker silo. If filling an upright silo or bag, the harvest could be stretched over a few more days if desired to shorten the hours of operation per day. The mowing operation keeps up by operating 3 hours/day.

In Figure 1, the first bar shows that at 100 acres/cutting, the mower-conditioner costs $9.57/acre to operate and the pull-type forage harvester costs $19.72/acre when picking up a single swath without raking or merging. The chopper costs assume that it will also be used on 100 acres of corn silage. The total cost is then $29.30/acre, or $8,790/year in ownership and operating costs for the equipment plus labor. The chopper is assumed to be replaced every 9 years. The mower-conditioner will be traded after 12 years.

The second bar (Figure 1) shows that economics of the 100 acre situation change when the producer purchases a windrow merger for $16,300 and is chopping 24' double swaths. Without expanding acreage, the main improvement results in less chopping time, reduced operating costs, and possibly extended life of the chopper. Adding the windrow merger in this 100-acre situation adds another $7.50/acre to operate over the 600 acres, but reduces the chopping cost to $11.37/acre. The chopping operation can then be finished within the 4-day window by chopping 4 hours/day. The chopper and its tractor are assumed to sit idle during the rest of the original chopping time rather than being used elsewhere. With this reduction in usage, the chopper will be kept for 12 years instead of 9 years. The total cost drops only slightly, to ($9.57 mowing + $7.50 merging + $11.37 chopping) = $28.44/acre or $8,532/year. This is a $258/year savings compared to the situation without the merger.

The third bar (Figure 1) shows the situation if the operator were to add the windrow merger taking advantage of the added chopper capacity by increasing the hay acreage to 200 acres/cutting. Acreage actually covered by the chopper is now back up to 7.5 hours/day, but since twice as much area is covered in one trip, the chopping cost is reduced to $9.86/acre. The mowing cost is also reduced

Figure 1. *Haylage Harvesting Costs With and Without Merging Windrows, Per Acre*

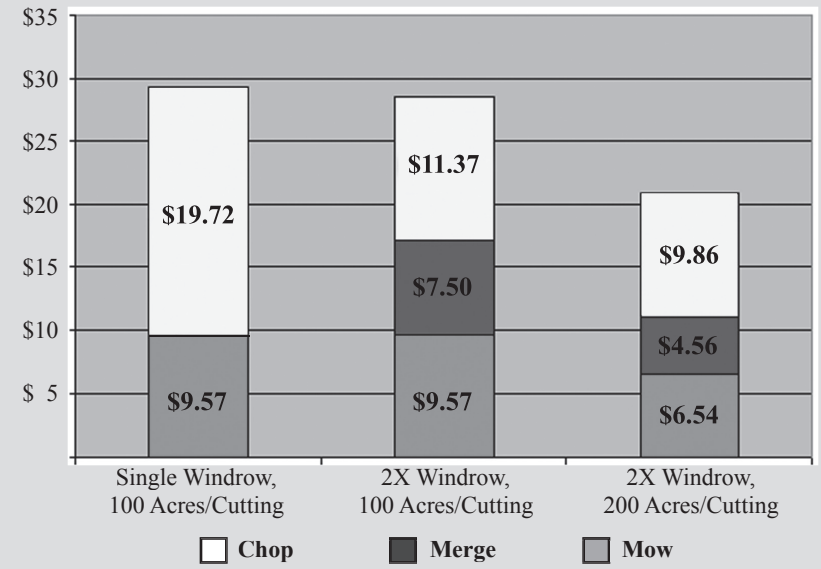
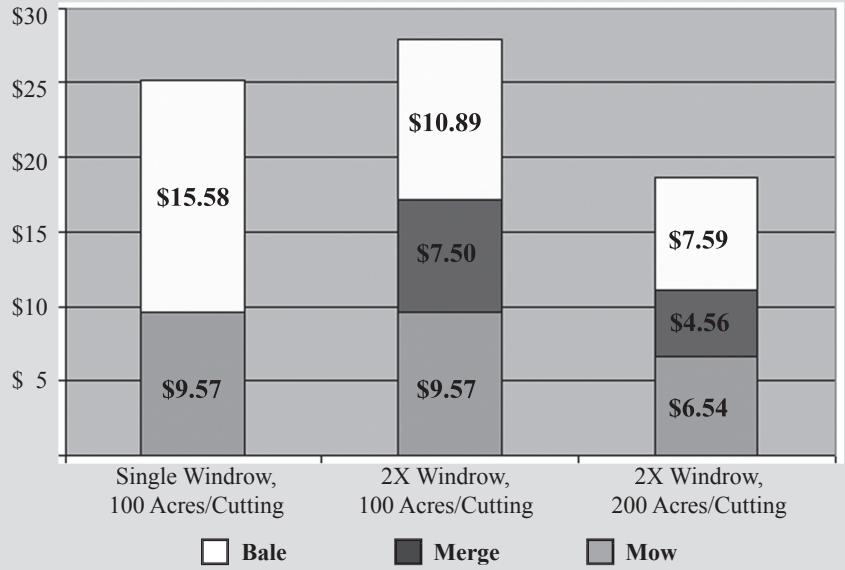


Figure 2. *Round Bale Harvesting Costs With and Without Merging Windrows, Per Acre*



to $6.54/acre and the merging to $4.56/acre; the total cost is ($6.54 mowing + $4.56 merging + $9.86 chopping) = $20.97/acre or $8.33/acre less than without the merger. Total harvesting cost/year increases from $8,790 to $12,580 but doubles the crop volume. The next question is whether the value of the crop is great enough to cover the additional harvesting costs plus the other inputs required.

One concern in doubling acreage is whether the forage harvester has sufficient capacity to handle 2X swaths without reducing field speed. If field speed must be reduced to handle the heavier swath, there may be less time and cost savings than indicated.

One could double the acreage to 200 acres without purchasing the windrow merger, by simply running the chopper for 15 hours/day instead of 7.5 hours (the chopper would wear out faster). If it is then traded in 6 years instead of 9 years because of the added use, that bumps the chopping cost to $17.56/acre. The total harvesting cost then comes to $14,463/year, or $1,883/year more than with the merger.

Similar calculations for round baling dry hay show that adding the merger increased total harvesting cost by $2.81/acre if kept at 100 acres; since baling costs less than chopping, there are less savings compared to the merger cost. If acreage is doubled when the merger is added, total harvesting cost is reduced by $6.46/acre compared to the $8.33/acre savings calculated for the chopping operation. The baling cost changes more with acreage than the chopping cost because the baler cost is not shared with the corn silage operation.