OHIO STATE UNIVERSITY EXTENSION

PURCHASING HAY EQUIPMENT - BALERS

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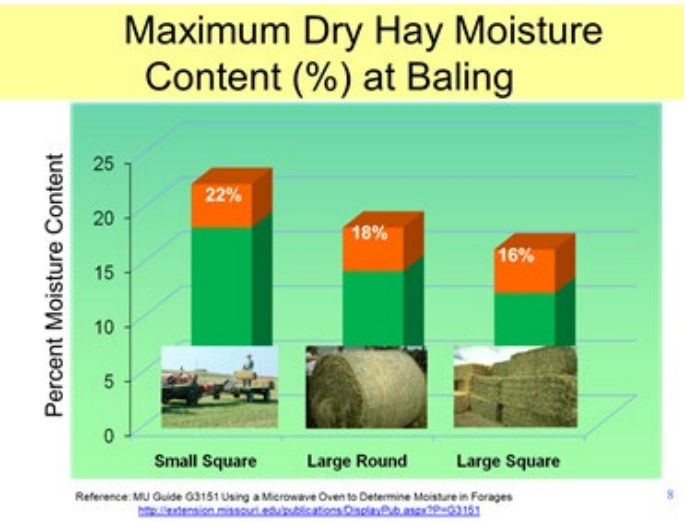
Introduction

The type of baler that is selected for haymaking is important in the success of the operation. First, goals of the hay operation must be set to determine the best baler for the job. These discussions focus on multiple questions that must be answered. Some of these include: if the hay will be dry or wet (baleage), is the hay sold, fed to livestock in the operation, current capacity of equipment in terms of lifting and horsepower, storage capabilities, and how the hay is fed.

Depending on the end use of the hay and factors of the operation, this might affect the type of baler that is most appropriate. Figure 1 that forage moisture requirements vary by type of baler used.

Figure 1. Maximum Dry Hay Moisture Content Percentage at Baling. Summarized by Weiss, 2015.



Another consideration when evaluation baler options is the ability to add a preservative to the forage. Preservatives can be useful tools in some systems and may be helpful for the haymaker. Preservatives are discussed in another factsheet in this series.

Baler types

Small Square Baler

Small square baling produces a bale that is approximately 24- 36 inches in length. Small square balers are relatively less expensive to purchase. These balers do have a lower horsepower requirement, so a smaller tractor can be used, and are generally easy to market with higher return potential. The cost to produce small square bales is less than that of larger balers. This type of baler can be easier for newer farmers. Finally, the small square bales are manageable in many storage settings including older storage facilities such as bank barns.

Disadvantages of small square baling include: increased labor to stack bales and store them in the barn, continued maintenance and the need for wagons to haul hay from the field, and few options exist for damp hay with small square baling, but preservative can be one option.

Small square baler pulling a wagon loaded in the field. Photo by Beers.

Small square baler. Photo by Beers.

Some labor-saving options exist for small square balers. One option is a hay accumulator. These come in multiple bale sets to collect the hay on the ground as it is baled behind the baler. Ten bales flat or on edge or fifteen bales on edge can be picked up with an accumulator. Another option is a bale kicker mounted on the small square baler that throws the bale into a stock wagon.

Small square bale accumulator. Photo by Corboy.

Small square bale grapple. Photo by Corboy.

Another consideration for small square bales is type of tie material. First, one must decide if twine, polypropylene, or wire is preferred. Twine can be cost effective and harmful to livestock if accidentally ingested. Sisal twine is also biodegradable where wire is not. However, twine does not hold up as well in weather whereas wire is versatile and has useful applications.

Large Square Baler

Like small square balers, the large square baler is the larger version with a slightly different design. The greatest advantage is capacity of the baler for forage. The bales are easy to stack and store as well as fit well for shipping or trucking. Large square bales are arguably the most marketable for their durability. Options exist to handle wet and damp hay with these balers including cutting of forage in the chamber, baleage and preservatives. Additionally, one does not have to stop between bales when baling like with round bales. Similarly, the size of the bale can be adjusted based on needs of the producer. Some disadvantages to this type of baler are the high horsepower requirement, in addition to the need for a loader for handling of the bales, which can be heavy, maintenance, the expensive cost to purchase the baler, and the requirement that hay be drier at baling compared with small squares. However, a lot of these factors are common with most balers.

Large square baler. Photo by Corboy.

Round Baler

Round balers are widely popular for their versatility on various size operations. Some advantages include capacity that can be adjusted based on model of the baler. Round balers can be fixed chamber or variable chamber meaning that the size of the bale can be adjusted in terms of diameter of the bale. A common round bale size is 4’ x 5’ or 4‘ x 6’, some models have variable chamber size, the width of the bale doesn’t change, but the diameter can be varied to match it of the operation or customer. If an operation has a specific tractor horsepower available, one can most likely find a baler to meet their needs. Additionally, round bales can be used in many types of farm operation. Round bales

are common in situations where producers bale dry or wet/damp forage for baleage. Round bales can be stored in multiple configurations including in rows, wrapped, or in a covered stack. Round balers allow for use with a variety of horsepower tractors due to the ability to adjust bale size and are available from a variety of manufacturers. These balers can handle forages and crops of all kinds including grass hay, corn stalks, straw and more.

Net wrap and Twine Round baler. Photo by Corboy.

Some disadvantages of round balers are frequent stopping to eject bales and the concern of bales rolling if a hill. As with other balers, maintenance is important to prevent risk of fire. Additionally, round balers require a range of tractor horsepower and have variable capacities. As capacity increases so does tractor horsepower requirement.

Round balers have various options for cutting the forage that aid in animal digestibility. Round balers can be held together by twine or net wrap. Both have their advantages for the desired outcome of the operation.

Round baler with extra wide pickup. Photo by Corboy.

Considerations

Some other factors must be considered when choosing the baler best for your operation. This includes economics of purchasing a baler. One must ask, will this machine provide a return on investment to the operation or are other factors such as time and repair costs being considered. Like most equipment, repairs and maintenance are key. These can vary based on the baler and exact specifications of the machine.

Time is also a key consideration. How does time work in your operation? Figure 2 shows tons per hour estimates for each type of baler. This can be important for time efficiency in the operation.

Figure 2. Tons per Hour Capacity of Balers (Hanna, 2016).

Type of Baler	Tons/hr
Small square baler	7
w/accumulator	7
w/bale thrower	6
load/haul/stack*	5
Large rectangular baler	16
Large round baler	16
and move in field	12
and haul/store*	10

*Hauling assumes bales are moved one mile from feild.

Adapted from: Hanna, M. (2016). "Estimating the Field Capacity of Farm Machines". Iowa State University. Ag Decision Maker File A3-24.

Additionally, nutrient value of the forage product can be affected by the type of baler selected and added specifications such as crop cutters. This cuts the forage into smaller pieces making it more digestible for the animal. These types of options should be considered when looking at purchasing a baler.

Storage

Regardless of the baler chosen for your operation, storage is a key consideration. Will the hay be stored inside, or will it be kept outside? Each type of bale: small square, large square or round bale have a slightly different storage management requirements for preserving the quality of the forage. Be sure to refer to the hay storage fact sheet to consider all the options.

Small square bale on a wagon in the barn. Photo by Corboy.

Stacked Round Baleage. Photo by Corboy.

Stacked Round Bales. Photo by Corboy.

References

Hanna, M. (2016). "*Estimating the Field Capacity of Farm Machines*". Iowa State University. Ag Decision Maker A3-24.

Weiss, W. (2015). "*Maximizing Dry Hay Moisture Content at Baling*". Ohio State University Extension.