MISSISSIPPI STATE UNIVERSITY EXTENSION

# Economic Considerations of Grain Bin Ownership

Ownership of grain bins or on-farm storage capacity has increased for row crop producers in Mississippi over the last several years. As growers have replaced cotton acreage with corn and soybean acreage, many have added on-farm storage capacity. However, many producers still do not have on-farm storage. For producers looking at all options available to increase net farm returns, on-farm storage may be an option to consider.

There are many reasons to consider having on-farm storage. One reason could be the ability to start harvesting crops earlier at higher moisture levels. In this case, not only would storage capacity be needed but also drying capabilities. Another reason could be to hold grain for potential market improvement. In this case, producers might want to consider some type of hedging strategy to protect against market downturns as well. An additional reason could be harvest efficiency (i.e., keeping combines running during the harvest season without having to wait for trucks to return from the grain elevator). This option and a few economic considerations for using on-farm storage to enhance harvest efficiency are discussed further below.

During harvest season, producers are often faced with long lines at grain elevators or delivery points for grain crops, causing harvest equipment to be idle in the field until trucks return from the elevator. Producers may have sold grain for delivery during the harvest period, may be selling at market price at the elevator as the crop is harvested, or may have sold their grain for future months but need to store at the elevator until the selling date.

During harvest, commercial grain elevators are swamped with producers trying to unload trucks. This is because grain harvest typically peaks around the same time for all growers in the same region, often occurring within a two-week to eight-week period. Typically, basis (the difference between the futures market price and local cash price) weakens (gets wider) due to the limited unloading capacity during this time. Regardless of the actual crop sale date, producers may benefit from having on-farm storage and thus delivering to the selling point when elevators are not overrun with trucks.

There are many factors to consider surrounding the total cost of constructing grain storage facilities. One factor is site preparation, which can vary greatly depending on what is currently in place. Producers who might already have gravel or road access to the desired grain storage location would have a somewhat lower expense per bushel of capacity than others. Also having existing concrete in place would greatly reduce construction costs. Additionally, when considering a site location, be sure to examine the availability of the needed electrical capacity.

Another important factor is the amount of storage needed. As storage capacity is increased, total costs also increase. However, cost per bushel decreases as capacity is increased primarily due to the ability to use the same bin loading and unloading equipment regardless of the capacity, as well as the ability to use this equipment across multiple bins. Also, electrical construction costs per bushel decrease as capacity increases.

Regardless of whether considering the total cost outlay or cost per bushel, the cost of on-farm storage bins has increased in recent years as have the other component costs. To obtain cost estimates for the construction of on-farm storage, several producers who had recently constructed grain storage facilities, as well as grain storage and construction businesses, were contacted in fall 2024. These contacts estimated the costs of construction ranged from $4.00–$4.50 per bushel. However, the price range did not include drying capacity costs.

The University of Tennessee developed a storage calculator in 2022 to help producers estimate their storage construction and operating costs. In the same year, based on Tennessee data, construction storage costs for metal grain bins were roughly $2.50 per bushel. This is consistent with the quotes that were obtained locally during that period, thus suggesting a roughly 40 percent increase in price over the last few years.

Table 1 presents some example estimates of construction costs for on-farm storage. The first example estimates are based on a single storage bin with a 60,000-bushel capacity. Thus, the upper end of the cost range, $4.50, was used to calculate this estimate. Adding capacity to this example or to existing capacity would result in lower construction costs per bushel. The second example estimate is based on an 80,000-bushel capacity at $4.25 per bushel. The third example estimate is based on a 120,000-bushel capacity and

is calculated at $4.10 per bushel. The Farm Service Agency (FSA) has a Farm Storage Facility Loan Program that offers loans up to 85 percent of the cost of construction, amortized for up to 12 years. The current FSA loan rate for these loans is 3.875 percent and was used for this example. Many producers use local and commercial banks. Rates at these type of institutions are in the 8 percent range and, if used, would increase these cost estimates.

In addition to the cost of constructing an on-farm grain storage facility, there will also be annual ownership costs. These costs include depreciation, taxes, insurance, labor, electricity, repair and maintenance, etc. Like construction costs between different operations and capacities, ownership costs will also vary. Estimates for these costs range from 4 to 10 percent of the establishment cost.

Table 2 shows some example estimates of ownership costs based on the establishment estimates used in Table 1. Again, as capacity increases, total cost increases, and the cost per bushel decreases. As shown in Table 2, annual ownership costs are likely to be less than public storage. A recent survey suggests that public storage averages around $0.05 per bushel per month and $0.33 per bushel annually. Additional fees for moving grain in and out of public storage will likely be applied to the monthly fee.

On-farm grain storage is a significant investment for producers to consider. Based on the information gathered in this study, the expense of on-farm grain storage is relatively close to or possibly higher than the expense of public storage, assuming public storage is available. However, additional options beyond this analysis should be explored to fully assess on-farm storage. One factor/benefit not addressed in this analysis is adding drying capacity and thus gaining the ability to harvest grain at higher moisture levels. Starting harvest earlier typically allows for more combine efficiency in terms of less grain waste and allows producers to cover more acres per combine, thus reducing fixed machinery costs.

Another factor is the length of time needed to deliver and unload at public elevators. Having on-farm storage allows producers to keep harvest equipment running and grain haulers moving. This increases harvest efficiency through less idle time in the fields and increases grain quality by allowing for timely harvests. Also having on-farm storage capacity allows producers to choose the optimal times to market and deliver their crops. Each of these additional options requires careful review and falls outside the scope of this publication; they will be addressed in future research.

## For More Information

This publication serves only as a guide that points out a few considerations when evaluating on-farm storage facilities. Producers are encouraged to get actual quotes on construction costs from industry professionals, such as suppliers and contractors, before starting the process of building on-farm storage bins. For help in estimating on-farm storage costs, the Mississippi State University Department of Agricultural Economics has a grain bin cost calculator tool available for download.

**Table 1. Example estimates of construction costs for on-farm storage.**

| Bushel (bu.) Capacity | Initial Cost of Establishment | Annual Payment* | Annual Cost per Bushel | Monthly Cost per Bushel |
|---|---|---|---|---|
| 60,000 bu. | $270,000 | $27,495 | $0.46 | $0.038 |
| 80,000 bu. | $340,000 | $34,624 | $0.43 | $0.036 |
| 120,000 bu. | $490,000 | $49,899 | $0.42 | $0.035 |

*Assumes the 15 percent down payment is amortized at FSA rate.

**Table 2. Example annual ownership cost estimates as a percentage of establishment cost.**

| Bushel (bu.) Capacity | Initial Cost of Establishment | Annual Operating Costs at 7% | Annual Cost per Bushel | Monthly Cost per Bushel (12-month storage) |
|---|---|---|---|---|
| 60,000 bu. | $270,000 | $18,900 | $0.32 | $0.026 |
| 80,000 bu. | $340,000 | $23,800 | $0.30 | $0.024 |
| 120,000 bu. | $490,000 | $34,300 | $0.29 | $0.024 |

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