Hemisphere®

ECONOMIC BENEFITS
OF GNSS GUIDANCE AND AUTOMATED STEERING IN AGRICULTURE

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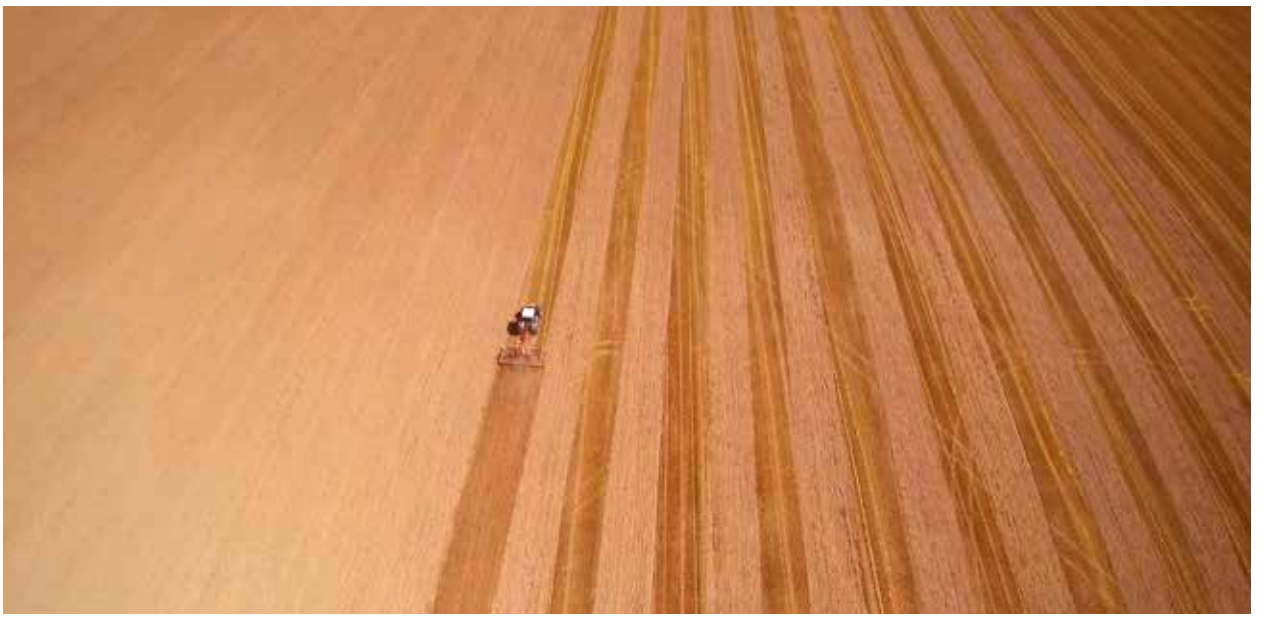


Agricultural crop production takes place within a biological system and is unique due to the exposure and dependence on weather conditions that cannot be directly influenced by the farmer. Alternatively, agriculture is like industrial production, with changing market values for the produced crops and the according input costs defining the farmer's profit.

The bottom line of every farming operation is directly related to the produced yield of a crop, the achieved selling price while marketing it, and the invested operating costs and overheads. Key operation costs are related to seed, fertilizer, chemicals, machine repairs, and fuel. According to Economic Research data from the U.S. Department of Agriculture (USDA), the use of seed, fertilizer, and fuel represented more than two-thirds of the total operating cost to produce a corn crop in the U.S during the year 2020.

The farming practices used in the field have a direct impact on the management of these materials and the resulting cost. This can be easily shown with a basic example.

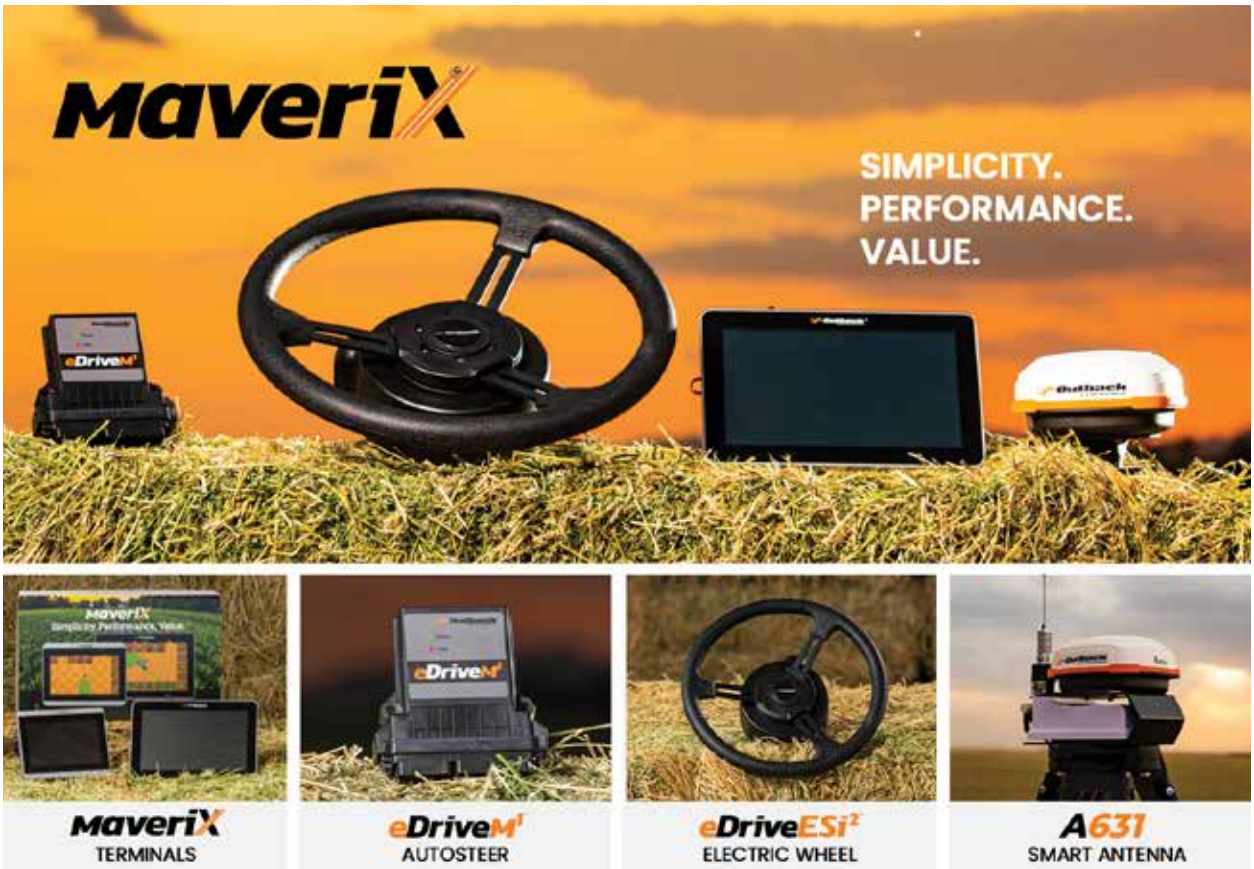
Source: https://www.ers.usda.gov/data-products/commodity-costs-and-returns/

Let's assume we are using a 30-foot-wide (~10m) implement for basic tillage operation with a disc pulled by a MFWD standard tractor. Without any GNSS Guidance or Automated Steering products, we assume that a 1-foot (~30cm) overlap for each pass in the field is targeted to compensate and ensure that no gaps are left. However, this also brings the tradeoff of overapplication in many areas. In this case, a 1-foot (~30cm) overlap would yield a 3% error across any worked surface. For a farm size of 500 acres (~200ha), this would be 15 acres that are worked without any benefit, yielding an unnecessary loss through overuse of input costs. With increased farm size and the number of field operations throughout the year, the error grows accordingly.

Based on the above example, we have created an overview that shows the impact of just a 3% error based on reference input cost data from the USDA.

Many farming operations are adopting GNSS Guidance and Automated Steering technology to optimize their input cost per acre while growing corn, soybean, wheat, or canola crops.Profit margins are thin in farming and depend heavily upon the input cost per grown crop. Today's agricultural market conditions require a new level of accuracy and accountability. In the past, what was perceived as simple "skips" or "overlaps" when tilling, planting, or spraying could quickly end up costing the farmer thousands and thousands of dollars.

The Outback MaveriX system provides a solution for GNSS Guidance, Automated Steering, and Application Control. It minimizes the need for overlaps and allows the customer to get the most out of their land. The MaveriX system provides a more precise tillage, planting or spraying application. Which in turn, results in higher yield rates, lower fuel costs, and a more efficient management of high-cost farming materials.



As our return of investment graphic demonstrates, adding an Outback Guidance MaveriX system and receiving a modest 3% improvement in error will easily return the costs of the system in the very first season of use. This does not even consider additional benefits of the system like reduced operator fatigue, which allows for a more comfortable season in the field and increased working hours. But these benefits are also expected to impact the bottom line of the crop production process.

The income for farming operations is heavily dependent on the ability to manage input costs to ensure the best possible bottom line for every harvest. While external conditions like weather, input costs, and markets cannot be directly impacted by the grower, it is possible to limit the error on input costs by utilizing a GNSS Guidance and Automated Steering system. Hemisphere GNSS is offering such a solution with the Outback Guidance MaveriX Precision Ag product. Please contact us to learn more about your opportunity to improve your bottom line with our products.

https://www.outbackmaverix.com/

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