

Economics of Pasture Renovation

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In the Midwest, pastures are usually assigned to land on the farm that is too steep and/or too rocky for row crop production. Typically, pasture soils tend to be shallow, low in fertility and droughty. The dominant plant species in pastures are often Kentucky bluegrass, tall fescue and weeds. The results of this combination of conditions are usually low yields of low quality forage and less than optimum animal performance. One of the best ways to improve forage yields, forage quality, and animal performance on these low producing grass pastures is to periodically renovate them by introducing legumes into the stand. Financially sound management decisions should be made on the basis of comparing revenues to costs of a particular practice. While the benefits of renovation are well documented, renovation is not without some costs. Another article at this web-site discusses the management practices involved in renovation; this article will evaluate the economics of renovation.

When evaluating the economics of a management change, such as pasture renovation on a beef cow-calf operation, it's assumed that the change will affect the operation in four possible ways: 1) increase revenues, 2) decrease costs, 3) increase costs, and/or 4) decrease revenues. Obviously, increasing revenues and decreasing costs will have a positive effect economically to the operation or enterprise while increased costs and decreased revenues will have a negative effect on the operation's bottom line. In this case, the decision to make a management change is clear-cut; if the value of the positive impacts is greater than the value of the negative impacts, then the management change is worthwhile. On the other hand, if the negative impacts outweigh the positive impacts, it wouldn't be in the best interest of the producer to implement the change in question. Let's take a closer look at the four possible impacts of pasture renovation to a beef cow-calf operation.

Increased Revenues

Increased revenues are most likely to come from two sources; increased weaning weights of calves and increased cow conception rates. Research work done in Ohio, Kentucky and Indiana in recent years has resulted in some variability in the level of these increases. These research studies showed increased weaning weights of between 30 to 50 lbs. (40 lb. average) and an average conception rate improvement of about 10%. If a baseline weaning weight of 450 lbs. is assumed for calves on endophyte infected fescue pasture and the cow conception rate on this same pasture is set at 80%, then the addition of a legume through renovation of these pastures would result in an adjust weaning weight of 490 lbs. and an improved conception rate of 90%. So what is the dollars and cents? The baseline case would result in 360 lbs. of calf sold per cow (450 lbs. /calf X 80% of the cows actually calving), while the renovated pasture case would result in 441 lbs. of calf sold per cow (490 lbs./calf X 90% of the cows actually calving). These additional 81 pounds of calf per cow is valued at \$1.00 per lb. (for this example, your figures or the current market value would adjust this price).

Decreased Costs

Primarily, decreased costs associated with pasture renovation are the reduction or complete elimination of the expense of nitrogen fertilization. However, many agronomists agree that in general, a great deal of pasture land is not soil tested nor is it fertilized regularly. So it becomes questionable and a matter of individual operation management as to whether this decreased cost is actually realized. While producers who weren't previously fertilizing pastures may not save on this cash expense, they will likely see improved forage production from the nitrogen fixation resulting from the addition of clover in the grass pasture stand. Therefore, for the purposes of this example, decreased costs due to nitrogen fixation will not be considered. However, it should be considered by the producer as he/she considers the economics of pasture renovation in their own operation.

Increased Costs

Increased cash costs associated with establishing and maintaining clover in tall fescue pastures include seed, fertilizer, lime, and seeding (tillage, drill, broadcast, etc.). There are budgets at several land-grant colleges that can be used to estimate these costs. A producer is highly encouraged to use their own specific figures or even a field by field set of actual figures. For the purposes of this example, let's assume an increased costs value of \$25 per acre per year and a

stocking rate of one (1) cow-calf unit per two acres. Based on these assumptions, costs of renovation (increased costs above current un-renovated costs) would be \$50 per cow per year.

Decreased Revenues

In the case of pasture renovation, we aren't likely to experience any decreases in revenues. Any impact negatives are most likely to be expressed in the increased costs category.

Based on the assumptions made in this example, the positive impacts (\$81 per cow) exceed the negative impacts (\$50 per cow) by \$31 per cow. Based on this example, we can only conclude that pasture renovation with clover will improve profitability based on this particular set of assumptions. **However, it is extremely important that the cow-calf operator understand that their own situation will not be precisely as the one described in this example. So use your own figures, assumptions and personal experiences.**

Before deciding to make a considerable change in management and/or in investments, producers should also consider where their operations would most likely fall. Producers should also consider their cash flow situation, the length of time they intend to run cattle on the pasture, and the current market conditions when making this decision.

While this framework was applied to a specific pasture renovation question, the partial budget framework can be applied to many everyday farm decisions. As always, producers are encouraged to discuss these decisions with their local extension educator or NRCS/SWCD representative.

Adapted from: University of Kentucky, Agricultural Economics-Extension No. 2005-04, "The Economics of Renovating Pastures With Clover" and Purdue University publication AY-251, "Improving Pastures by Renovation"