

# Impact

Sharing the difference CSU Extension makes in people's lives and their communities.

## A solid diet of onions

*Extension research encouraged Eastern Colorado sheep farmers to adopt a money-saving feed source*

### Issue

Every year Colorado onion growers must spend time and money disposing of thousands of tons of leftover and rejected cull onions because they easily spread disease and ruin the soil. But to Tom McBride, an Adams County Extension livestock agent, cull onions were a decent source of feed. They are 90 percent water and contain nine to 12 percent protein. Since Colorado onion growers will give away culls for free, he figured sheep farmers might be able to significantly reduce their feed expenses by using the leftover onions. Widespread adoption of this practice demanded reliable, research-backed data to ensure animal health.

### Extension's Response

For over a decade, McBride has conducted several studies to learn what happens when sheep eat an onion-based diet. Onions contain sulfides that cause anemia and previous research has shown that cattle become ill and can die if their feed contains more than 20 percent onions. McBride needed to find out if the same rule would apply to sheep.

McBride started feeding onions to his own sheep without issues. As word spread, questions emerged. How would feeding onions to pregnant ewes affect weight gain? Would lambing rates fall if pregnant ewes ate onions throughout gestation? Would onions affect fleece weight and quality?

CSU Extension veterinary specialist Tony Knight worked closely with McBride to answer these questions. They conducted several studies and drew data from two that evaluated the effects of feeding onions in different amounts to ewes and wether lambs.<sup>1</sup> Here are the details of these 2006 studies:

- **Pregnant Ewes Study:** 17 pregnant ewes were fed a diet consisting entirely of onions for the last 102 days of gestation. A control group of 17 ewes were fed a normal diet of alfalfa and grain. Blood samples were taken throughout the trial and analyzed to determine the presence of anemia. Fleece weights, pregnancy rates and lambing percentage were also determined.
- **Market Lamb Study:** 50 wether lambs were fed a diet of cull onions for approximately 60 days before slaughter to see if they would gain enough weight to reach the 130 to 150 pound target. Lambs were randomly split into five groups that were fed a ration of zero, 25, 50, 75, or 100 percent onions. At slaughter, carcasses were evaluated for USDA quality, yield, taste and tenderness.



### The Bottom Line

- Extension-led research determined that cull onions are a safe food source for sheep
- Cull onions, a free and readily available source of feed, have the potential to help sheep farmers across Colorado gain a higher return on their investment

### By the Numbers

- Colorado's national ranking for onion production: 5
- Colorado's national ranking for sheep production: 4
- Reported daily savings when using cull onions: \$16.80

## Impact

McBride and Knight have generated results that establish cull onions as a safe alternative to traditional feed rations of hay, alfalfa and corn. Both of these studies produced data that clarifies the unique ability sheep have to process onion sulfides. Overall, findings indicate that ewes can live on a diet of 100 percent onions while lambs headed for slaughter do better on a ration of 50 percent onions.

Specifically, ewes rapidly adapted to eating cull onions. Unlike cattle that can develop a fatal anemia from eating too many onions, sheep presented a mild transitory anemia regardless of how many onions they ate. After a week to ten days, however, red blood cells regenerated and the sheep recovered. They continued eating cull onions without hesitation. Furthermore, ewes did not appear adversely affected when compared to the control ewes, who ate no onions. In fact, onion-fed ewes had comparable body condition scores and fleece weights. Most importantly, there was no significant difference in pregnancy or lambing rates. Therefore, it appears that pregnant ewes can be fed a pure onion diet with minimal detrimental effects.

On the other hand, data indicates that a 100 percent onion diet is not recommended for finishing market lambs. At most, lambs can eat a diet of 25 to 50 percent onions and still reach an acceptable market weight. Lambs fed a diet of 75 and 100 percent onions showed minimum weight during the finishing period. Remarkably, onions fed at any percentage ration did not adversely affect meat quality or flavor.

These results have also helped McBride successfully establish mutually beneficial relationships between sheep farmers and onion growers. Onion growers are eager to give their onions away for free; some even deliver culls directly to sheep farmers during their season of availability (roughly September to March). As a result, onion growers report breaking even on disposal costs.

Sheep farmers, on the other hand, can significantly reduce feed expenses by supplementing rations with onions. Total savings depends on:

- the percent of onions in the daily feed ration,
- cost and type of feed normally given, and
- the duration of onion feeding.

For instance, one farmer reported spending approximately 84 percent less on feed every day, or \$3.20 instead of \$20.00, by feeding his 80-head sheep a mostly onion diet between September and March. Cull onions have the potential to help sheep farmers across Colorado gain a higher return on their investment, especially as the cost of livestock inputs (primarily fuel and feed) continue to rise.

<sup>1</sup> Whether lambs are young, castrated male sheep.

*“It’s amazing what Tom Mc Bride has been able to determine about the benefits of feeding onions to sheep. All the cull onions that we have now are going to big sheep feeders. You feel much better that you’re not crushing onions and plowing them under. It has some kind of value to somebody.”*

*– Bob Sakata*  
Owner and farmer, Sakata Farms

## Learn More

- Results and other information about Adams County Extension cull onion research projects are available at: [www.colostate.edu/Depts/CoopExt/Adams/ag/sheep\\_main.htm](http://www.colostate.edu/Depts/CoopExt/Adams/ag/sheep_main.htm).

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