

Short Rotations for Alfalfa Profitability

Rotating alfalfa to corn has many economical advantages.

Earlier this year I was asked how long an alfalfa stand should remain in production. It was noted by the producer that he had some stands of alfalfa that he thought were still very productive after 6 years of age (including the seeding year). This individual recognized that some of his fields became too thin after 5 years but that some of his better stands on better soils with good management still appear productive.

Due to fixed costs of harvest, pest control and fertility, maintaining high yields of alfalfa is the key to profitability. As stands age, yields decrease due to diseases, insects, soil compaction, wheel traffic, winter injury, and other environmental stresses. Data from alfalfa forage trials indicate that average yields of alfalfa peak during the second and third year of production (the first year is the seeding year) and that during the fourth year, stand decline averages 17% and by the fifth year yields drop by 34%. At some point yields decline faster than costs and net losses occur.

Rotating alfalfa to corn has many economical advantages: nitrogen contribution (120 pounds N/acre for a stand >50% alfalfa for first year corn and 50 pounds N/acre for second year corn); reduced insecticide needs for first year corn; less annual weed pressure; and the fact that corn yields 10 to 15% more following alfalfa verses corn after corn.

Shorter rotations for alfalfa can be more profitable in certain situations. In 1996–98, Dr. Greg Roth at Penn State looked at the potential for short rotations of alfalfa (3 years) and corn (3 years) on dairy farms in PA. Dr. Roth concluded that short rotations can be justified on some but not all farms. The most important factor in the rotation decision is to establish the yield potential of the alfalfa stand in the 3rd and the 4th year, counting seeding year as year 1.

The Penn State study recommended short alfalfa rotations on farms that do not have excessive manure; that typically have low yields of alfalfa in the fourth year due to intensive management practices; are able to get good stands and yields during the establishment year; and have high pressure from corn rootworms.

In 2008 in Wisconsin, Dr. Dan Undersander did an economical analysis and presented information that indicates that incorporating significantly shorter alfalfa rotations can result in greater profit per acre of an entire farm because of higher alfalfa yields, higher forage quality, reduced pesticide use, greater nitrogen credits and increased corn yields.

Undersander found that taking all of these factors into account and due to higher yields for both alfalfa and corn for grain and silage as well as reduced fertilizer costs that farm profitability increased almost \$33.00/acre for farms with shorter, 3 years of an alfalfa stand (year 1 being seeding year).