## Alfalfa Stand Height and Nitrogen Availability

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The nitrogen credits that occur from turning over an alfalfa or alfalfa/grass stand depend on the amount of biomass that is present. The standard recommendations are included in Table 1.

The thicker the stand (up to 4 plants/ft<sup>2</sup>), the more nitrogen credits will be available for the next crop. Legume credits are the same whether the following crop is planted with or without tillage.

Generally, more than  $\frac{1}{2}$  the legume credits are belowground (columns in Table 1 with less than 8" of growth). The root system of alfalfa is continually growing and continually turning over. About 15% of the carbon in alfalfa roots turns over annually. This carbon and the associated nitrogen either provide nutrients for grasses growing with the alfalfa or are reused by alfalfa.

When a stand is turned down, the root system gradually decomposes to provide nitrogen and other nutrients for the growth of the next crop. When alfalfa stands with 4 or more plants/ft<sup>2</sup> are turned down, 150 lbs of nitrogen/ac is made available to the next crop grown on the field; this is sufficient for a corn crop with starter nitrogen.

While grasses will provide some nitrogen to the next crop, the amount is significantly less than from alfalfa, so grass plants are not normally counted when figuring the nitrogen credits available from plowing down alfalfa.

Nitrogen from decomposing legume root systems is available gradually throughout the growing season. The gradual nitrogen

availability can be an advantage as many producers found out last year when 4-10" of rain washed nitrogen from commercial fertilizer below the root zone of corn and additional applications were needed. This nitrogen loss did not occur where the nitrogen was coming from decomposing alfalfa.

While not mentioned in Table 1, it is assumed that even in the second year after being plowed down, alfalfa contributes as much as a 50 lb/ac nitrogen credit to the newly planted crop.

It is important to note that an additional 40 lb/ac of nitrogen is figured for legume credits when top-growth above 8" is left on the field. In practice, producers seldom do this because although nitrogen is worth about \$40/ac, there is generally one ton/ac or more hay that can be captured by cutting shorter, which is worth between \$100-\$150/ton.

Table 1. Nitrogen credits from turning over an alfalfa or alfalfa/grass stand.

Stand Density	Medium/Fine Soils		Sandy Soils	
	Regrowth after last cutting			
	>8"	<8"	>8"	<8"
	Lb nitrogen/ac			
Good >4plt/ft <sup>2</sup>	190	150	140	100
Fair 1.5-4plt/ft <sup>2</sup>	160	120	110	60
Poor <1.5plt/ft <sup>2</sup>	130	90	80	40