

# Alfalfa: The Unsung Hero of Sustainable Crop Rotations

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**A**lfalfa is somewhat of a wonder crop that often doesn't get the attention it deserves. In the Midwest, corn and soybeans tend to be the focus of most agronomic conversations. But the environmental and economic benefits of alfalfa as part of a corn and soybean crop rotation can't be overstated. Here are some benefits to consider if you're adding alfalfa to your next crop rotation.

## Boost Soil Health

Soil is one of a farmer's most valuable assets – and one that can't be easily replaced once it's gone. Protecting soil health with alfalfa can help achieve greater productivity potential over the lifespan of a cultivated field.

Since its roots extend an average of 9-16' below the soil's surface, an alfalfa crop can help break up compacted soil and retrieve moisture and nutrients that may lie well beneath the soil's surface. Those deep roots can also create channels in the soil to improve water infiltration and biological activity in the root zone, as well as give alfalfa exceptional water-use efficiency compared to other crops. Those benefits, in turn, transfer to subsequent crops, where water and nutrient use efficiency are improved.

Alfalfa is also an excellent cover crop to help reduce soil erosion. Because there are reduced tillage requirements when growing alfalfa, there is less soil disturbance and breakdown of the soil's structure, and soil tilth can also be improved.

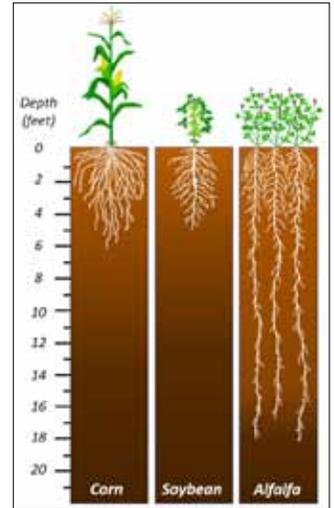


Photo source: NAFA's Alfalfa, Wildlife & the Environment, 2020.

## Improve Pest Control

In addition to its many soil health benefits, rotating alfalfa with other crops can also help reduce weed, disease, and insect populations in fields. The dense canopy of an alfalfa crop can help shade out weeds that threaten yield in annual crops like corn and soybeans, and aggressive and consistent alfalfa cutting can control weeds without demanding multiple herbicide applications. This slows the progression of herbicide-resistant weeds when alfalfa is added to a crop rotation that includes annual crops. The weed suppression benefits alfalfa provides can also mean reduced herbicide use in subsequent crops.

Adding alfalfa to a traditional corn/soybean rotation can also help break the life cycle of common pests. Alfalfa crops provide a great habitat for beneficial insects, which can help reduce populations of pests threatening a crop's yield potential. Bees pollinate alfalfa, so a flourishing crop is healthy for the bee population as well.

## Reduce Input Costs

Corn, in particular, requires a significant investment in crop protection and fertility inputs to optimize yield potential. Comparatively, alfalfa is a low-input crop to grow. Once an alfalfa crop is established, weeds can be managed with little to no herbicide application if a consistent cutting schedule is followed.

The fertility costs for growing alfalfa also tend to be considerably lower than with row crops since alfalfa fixes nitrogen from the atmosphere. Alfalfa returns nitrogen to the soil, so there should be less nitrogen fertilization required in the subsequent crop as well.

## Protect the Environment

You may only consider the benefits of growing alfalfa from an economic or productivity standpoint, but the crop can offer benefits to the environment. Sediment from eroded soils pollutes streams, lakes, and rivers and can negatively impact marine ecosystems. Alfalfa helps reduce soil erosion; it limits the amount of cultivation by anchoring soil in place with its extensive root system and by improving the tilth and water infiltration capacity

of soil. Its lush canopy can help protect soil from wind and water erosion as well, reducing the runoff potential of pesticides that could be harmful to waterways.

Since alfalfa crops fix their own nitrogen from the atmosphere, they can deliver nitrogen credits to the soil to grow subsequent crops. Research from the University of Wisconsin-Madison in 2018 has estimated that the nitrogen credit for alfalfa ranges 40-190 lbs of nitrogen per acre. That means less fertilizer wasted on your fields and reduced fossil fuel consumption.

### **Reap the Benefits of Alfalfa**

Planting alfalfa can help improve soil health, breaks pest life cycles, requires fewer inputs than other cash crops, and offers environmental benefits. Alfalfa proves to be a valuable rotational crop boosting the productivity potential of subsequent annual crops. If you're looking for a more sustainable crop production system, consider adding alfalfa to your rotation to reap its economic and environmental benefits.