

## Planting Perennials can Help Provide Ecosystem Services

Ryan Crossingham Farm & Ranch Guide Assistant Editor

It's time to reconsider perennials in rain-fed cropping systems, according to M.A. Liebig, Research Soil Scientist, USDA-Agricultural Research Service, Northern Great Plains Research Laboratory.

Liebig said despite land use projections suggesting a limited role for perennials in conventional crop production systems, cropping systems are increasingly looked upon to provide ecosystem services beyond the provision of food, feed, fiber and fuel.

He believes supporting, regulating, and cultural ecosystem services both directly and indirectly benefit human welfare, and should be included within a larger rubric of expectations for agricultural landscapes.

Furthermore, those expectations complement the multiple functions of perennials, which include soil fertility enhancement, targeted remediation, wildlife habitat or water quality protection.

Combined with the anticipated changes in climate in most regions of North America, the important roles of permanent ground cover is further highlighted.

Liebig noted agroecosystems in the northern Great Plains are currently undergoing a transition toward more intensified production, mostly due to climate-driven shifts with greater early-season water availability and an extended growing season.

"Our growing conditions have slowly become more adaptable to warm-season crops, plus seed companies have invested significant resources to adapt these crops to our region," said Liebig. "It's tough to pinpoint a start to the transition, but the wet cycle beginning in the early 1990s is often referred to as the 'tipping point' toward wetter and warmer growing seasons in our region."

Liebig said this transition to a wetter, warmer and more variable climate will increase the susceptibility of soil degradation on agricultural lands through increased rates of erosion, nutrient loss and salinization.

Adding perennial grasses, and the permanent ground cover they can provide, can serve as a buffer to climate-induced stresses while concurrently improving soil conditions to facilitate agroecosystem resilience, according to Liebig.

Which perennial is a good place to start? Liebig suggests alfalfa is a good choice.

"It has a proven track record of good production in the area, and you can often seed it with a nurse crop to get a small economic return during the establishment year," he said.

For growers looking to implement perennials in their operation, Liebig said identifying a market for the forage (i.e. nearby dairy, cattle producer, etc.) is the place to start.

"Once you have a buyer, review your land base to determine where a perennial makes the most sense to plant," he said. "While all cropland can benefit from inclusion of perennials, there can be significant benefits to overall farm sustainability if the perennials are placed on strategic parts of the landscape."

Liebig also noted, though it goes against prevailing trends, returning livestock back to the farm will also help when implementing perennials.

"Returning livestock back to the farm offers a clear path for a greater role for perennials on cropland," he said.

