# In The Field

| Market Report | Year Ago | 4 Wks Ago | 3/27/15 |
|---|---|---|---|
| Alfalfa, Large Square Bales Good To Premium, RFV 160-185 Northeast Nebraska, ton | 195.00 | • | 175.00 |
| Alfalfa, Large Rounds, Good Platte Valley, ton | 127.50 | 77.50 | 77.50 |
| Grass Hay, Large Rounds, Good Nebraska Average | 107.50 | 95.00 | 105.00 |
| Dried Distillers Grains, 10% Moisture Nebraska Average | 235.00 | 177.50 | 174.25 |
| Wet Distillers Grains, 65-70% Moisture Nebraska Average | 69.00 | 53.54 | 57.00 |
| **•No Market** | | | |
| Source: Cornhusker Economics April 1, 2015 | | | |

## Soybean Inoculation: When, Where, and Why

In an effort to ensure profitable production on the estimated 5.1 million acres of soybeans in 2015, Nebraska farmers are scrutinizing inputs and really focusing on profit. Using products/inputs that may increase yields 2 bushels per acre might have been profitable when soybeans were $14.40 per bushel in 2012, but becomes a stretch at the $9.73 per bushel set in February for some crop insurance policies.

During soybean planting season we often think of planting date, seeding rate, and seed treatments. In regard to seed treatments, one of the choices being made right now is "Should I inoculate my soybeans?" The risk vs. reward of inoculating soybeans has been discussed for decades. The risk is not lower yields, just whether the inoculant is going to return a profit, even though it is relatively cheap.

The process of fixing nitrogen in the soil air to ammonia occurs through the symbiotic relationship between soybeans and the *Bradyrhizobium* species, a bacteria within the nodules of soybean roots. The soybeans get needed nitrogen and the bacteria get some carbohydrates in return. This process provides soybean plants 46%-74% of what they need; the remaining amount is taken up from the soil (Salvagiotti 2008). A 70 bushel per acre soybean crop will take up roughly 330 lb N/acre in the aboveground portion of the plant, roughly equivalent to the nitrogen demand of a 245 bushel per acre corn crop.

Your soybean field likely fits into one of three situations:

1. No previous history of soybeans.
2. It has been more than three to five years since soybeans were grown or soybeans have been grown in rotation every two to three years, but an environmental factor may have negatively impacted survival of bacteria.
3. Soybeans have been grown in the rotation every two or three years and environmental conditions have been good.

Figure 1. The large number and size of nodules is one sign of an adequate environment for nitrogen fixation by *Bradyrhizobium* species. (*Photo by Nathan Mueller*)

In situations where soybeans have never been grown, yield responses of 49 bushels per acre have been measured in Nebraska (Elmore 1984). However, more modest yield increases of 1 to 10 bushels per acre are expected. This is largely dependent on the nitrogen supply from soils and the relative increase in nitrogen fixation. For example, a 2009 Iowa study reported inoculation increased soybean yield 2 bushels per acre on land coming out of pasture (Ruiz Diaz 2009).

If your field falls in the second situation, several environmental factors can cause poor nodulation, decrease nitrogen fixation, and reduce survival of these bacteria, including:

- **Non-optimal soil pH.** Low soil pH can decrease nodulation, nitrogen fixation, and survival of various strains. Ideal pH is near 6.8. Soil pH less than 6.0 can start to decrease root hair modification needed for the formation of nodules (Duzan 2004). Therefore, following economic thresholds for lime application when soil pH decreases to 5.6-5.8 also manages our bacteria. High soil pH and salinity also decrease nodulation, nitrogen fixation, and survival of these bacteria.

- **Floods and droughts.** Fields flooded for more than one week decrease nitrogen fixation and decrease survival of bacteria because bacteria need oxygen. Sandy soils and droughts in years when soybeans are not being grown also can lower populations. However, two recent research studies suggest not to be overly confident in assuming a yield response to inoculants after floods (Furseth 2011, Wilson 2014).

- **Increasing number of years since soybeans were last planted.** Most university guidelines suggest inoculating if it has been more than three to five years since soybeans were last grown. These bacteria are still present in soils after 30 years in grass production, just at a much lower population. Two more common situations in Nebraska where soybeans may benefit from inoculation are when soybeans are planted after continuous corn or after corn that followed four years of alfalfa. The probability of a yield response in fields with a recent history of soybeans is extremely low. An eight-year study (2000-2008) testing 51 inoculant products in 73 experiments conducted in Wisconsin, Iowa, Indiana, Minnesota, and Nebraska resulted in average yield response of 0 bu/ac (De Bruin 2008).

If your field falls into the third situation where the environmental factor listed above did not occur, some still advocate for inoculating with more effective nitrogen-fixing strains of these bacteria over common indigenous strains, e.g., *Bradyrhizobium japonicum Bj123* (Shiro 2013), in the Midwest even when environmental conditions have been conducive for nitrogen fixation. In the 2000 to 2008 study, new inoculant products and strains were used. Of the 10 most widely tested products, yields were not influenced in fields with a recent history of soybean. This is likely due to highly competitive indigenous strains diminishing potential gains from applying more effective strains.

In summary, if you have managed soil pH well, planted soybeans recently, have medium to heavy textured soils, and have not experienced extended droughts or floods, refocus your money away from soybean inoculation and move it to other management options that have an improved chance of return.

For more information on soybean inoculation, see these Nebraska Extension resources online or at your local Nebraska Extension Office:

Soybean Inoculation: Understanding the Soil and Plant Mechanisms Involved (NebGuide 1621)

Soybean Inoculation: Applying the Facts to Your Fields (NebGuide 1622)

Source: Cropwatch.unl.edu

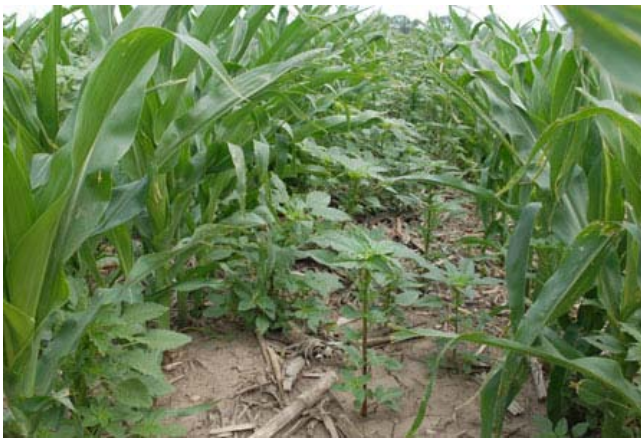
# New Corn Herbicides for 2015

Several new herbicides have been registered for weed control in corn. These new herbicides do not have an active ingredient with a new mode of action, but they are tank mixtures of existing herbicides. Here is the list of corn herbicides expected to be available in the 2015 growing season.

**Anthem™ ATZ** [atrazine (42.5%) + pyroxasulfone (5.15%) + fluthiacet-methyl (0.15%)]. It is a premix of three herbicides with different modes of action. It can be applied pre-plant, pre-emergence, or early post-emergence for control of broadleaf and grass weeds in all types of corn. Do not apply more than 39 oz/ac per growing season in coarse-textured soil and do not apply more than 76.46 oz/ac in medium- and fine-textured soils. Do not harvest or feed grain or stover within 70 days of last application. EPA Reg. No. 279-3449. Mode of action groups: 5, 15, 14.

**Breakfree® NXT ATZ** [acetochlor (33.4%) + atrazine (26.9%)]. It is a premix for pre-plant and pre-emergence control of selected broadleaf and grass weeds in corn. The application rate ranges from 1.4 to 3 quarts/ac depending on soil texture and organic matter content. EPA Reg. No. 62719-671-352. Breakfree® NXT Lite [acetochlor (46.3%) + atrazine (18.3%)]. This herbicide is similar to Breakfree® NXT ATZ, but contains more acetochlor and less atrazine. EPA Reg. No. 62719-670-352. Mode of action groups: 15, 5.

**Callisto® GT** [glyphosate (34%) + mesotrione (3.4%)]. It is a new premix for post-emergence weed control in glyphosate-resistant (Roundup Ready) corn. Do not apply more than one time per year and do not apply more than 2 pints/ac per year. Do not harvest forage, grain or stover within 45 days after application. EPA Reg. No. 100-1470. Mode of action groups: 9, 27.



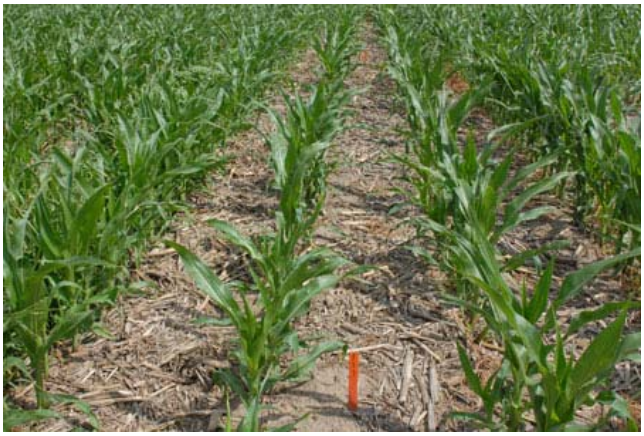


Figure 1. Control of Palmer amaranth in field corn was studied as part of UNL herbicide efficacy trials. (Above) Untreated control. (Below) Corvus at 4.4 oz/ac (pre-emergence) followed by DiFlexx at 8 oz/ac (post-emergence).

(*Photos by Amit Jhala*)

**DiFlexx™** [dicamba (56.6%)]. It may be used pre-emergence or post-emergence for control of annual broadleaf weeds and control or suppression of many biennial and perennial broadleaf weeds in field corn, field corn grown for silage, white corn, seed corn, and fallow cropland. DiFlexx includes exclusive CSI™ Safener technology which enables plants to better withstand herbicidal activity and provides better crop safety. Additionally, the safener in DiFlexx will safen the use of any amide product used before crop emergence. It can be applied from burndown or pre-plant as far out as 30 days prior to planting through late post-emergence (V10) at a rate of 8 to 16 fl oz/ac. It can be applied sequentially or in tank mixtures to provide a complete weed control program in corn. Do not exceed application rate of 64 fl oz/ac per year. Mode of action groups: 4.

**Fierce™** [flumioxazin (33.5%) + pyroxasulfone (42.5%)]. Fierce is a new premix for pre-emergence control of broadleaf and grass weeds in no-till and minimum till corn. Mode of action: flumioxazin is a PPO inhibitor and pyroxasulfone is a seedling growth inhibitor. EPA Reg. No. 63588-93-59639. Mode of action groups: 14, 15.

**Instigate™** [rimsulfuron (4.17%) + mesotrione (41.67%)]. Instigate is a new premix for pre-plant and pre-emergence control of broadleaf and grass weeds in corn. It can be applied up to 14 days prior to

planting or before corn emergence. It can be applied within a rate range of 5.25 to 7 oz/ac, depending on soil texture. EPA Reg. No. 352-873. Mode of action groups: 2, 27.

**Solstice™** [fluthiacet methyl (2.2%) + mesotrione (38.52%)]. It contains two active ingredients possessing both contact and systemic activity that can be applied post-emergence for selective control of broadleaf weeds in field corn, seed corn, yellow popcorn, and sweet corn. It can be applied up to V8 corn growth stage or until corn is 30 inches tall. Application rate is 2.5 to 3.15 fl oz/ac. If atrazine is mixed with Solstice, do not apply to corn that is more than 12 inches high. EPA Reg No. 279-3461. Mode of action groups: 14, 27.

**Zemax™** [S-metolachlor (36.8%) + mesotrione (3.68%)]. Zemax contains the active ingredients of Callisto (mesotrione) and Dual II Magnum (S-metolachlor). This double-mode-of-action herbicide can be applied from 14 days early pre-plant up to 30-inch corn. Zemax is also used in grain sorghum for pre-emergence control of many annual grass and broadleaf weeds. EPA Reg. No. 100-1410. Mode of action groups: 15, 27.

**Zidua™** [pyroxasulfone (85%)]. Zidua is a pre-emergence herbicide for control of annual grasses and some small-seeded broadleaf weeds in corn. It is also labeled for early post-emergence application in corn, but only has residual activity. Therefore, when applied post-emergence in corn it should be tank-mixed with another foliar active herbicide for control of existing weeds and Zidua will provide residual activity. Application rates of Zidua vary depending on soil texture. EPA Reg. No. 7969-338. Mode of action group: 15.

More information about the efficacy of these and other herbicides is available in the 2015 Guide for Weed Management in Nebraska (EC130) for sale in a print or downloadable version from at http://marketplace.unl.edu/extension/extpubs/ec130.html. Always refer to the herbicide product label for complete details and directions for use.

Source: Cropwatch.unl.edu

## INCREASE PASTURE CARRYING CAPACITY USING CROSS FENCES

As your cows finish grazing corn stalks, don't put away your electric fence for the summer. You can use it to stretch your pasture.

Electric fence is the easiest and cheapest way to increase production from summer pastures. Dividing pastures with electric cross fences gives you more control of when and where your cattle graze. It helps you encourage cattle to graze pastures more uniformly and completely, including areas they normally avoid. And, it can help you improve the health and vigor of your grass by giving it time to recover and regrow after each grazing. As a result, your grass production and pasture carrying capacity will increase. This will be especially valuable this year considering the currently high cost of pasture.

I'm sure you've seen many ads promoting high-powered, high-tensile, imported electric fencing systems. I encourage using these systems in many situations – I use them myself sometimes. But, cross fences do not need to be permanent, nor do they need to be expensive. This is especially true if you already have electric fencing your animals respect. And using fencing equipment you already have gives you an inexpensive opportunity to experiment with where you might eventually place a more permanent cross fence.

The electric fence that keeps your cows on stalks during winter can give you this inexpensive opportunity to try some cross fencing where you have been reluctant to try it before. You might need to use two strands, though, to help keep baby calves in place.

So, as spring growth of your pastures begins to slow down, use your winter electric fence to try some extra summer cross fencing of your pastures.

More grass, better gains, and better profits might be the result.

Source: Bruce Anderson, UNL Forage Specialist