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### **Summer Fallow Legume Cover Study**

Next summer Lawrence Lagaly at Union City has agreed to cooperate in a legume cover crop SARE Grant 'on-farm' research study to determine the amount of nitrogen fixed and contributed to the soil residual. Since nitrogen is approaching the \$500 per ton expense level many wheat producers are looking at alternative ways to add free nitrogen back to the soil.

One of the biggest problems when dealing with legume cover crops in fallow wheat ground is estimating the contribution different legumes have to wheat ground. That's why the Lagaly legume trial is of importance to area wheat producers. Several legumes will be planted such as cowpeas, soybeans, mungbeans, and peas will be planted as green manure crops prior to drilling wheat next fall.

Nitrogen production from legume cover crops can contribute to the overall reservoir of nitrogen present in the soil for wheat production. Nitrogen accumulations by leguminous cover crops typically will range from 35 to 18 pounds of actual nitrogen per acre.

However, this is a range that is totally dependent on factors such as species of legume grown, the total amount of biomass produced, and the percentage of nitrogen in the plant tissue. Cultural end environmental conditions that limit legume growth, like delayed legume planting date, poor stand establishment, and drought will reduce the amount of nitrogen produced.

Conditions that encourage good nitrogen production include getting a legume stand quickly, having optimum soil nutrient levels and having a soil pH above 6 for good nodulation of the legumes. The two most important plant nutrients for legumes are phosphorus and potassium, which along with using the proper seed microbe inoculant, assures that maximum biomass will be produced for the moisture available during the summer.

Additional benefits of a legume cover crop are nitrogen fixation , weed suppression, reduction of insect pests and disease problems. Weeds will flourish on bare soil because they have no competition for light, nutrients and moisture.

Cover crops shade bare soil, thereby, limiting the opportunity for weed establishment. Legume cover crops have an allelopathic effect as they grow. Allelopathic actions take place in the soil when the legumes release natural toxins that inhibit or slow the growth of nearby weedy plants.

The use of leguminous cover crops has gained attention because of the increased in nitrogen fertilizer prices. It is believed that the use of cover crops in fallow wheat ground can be an effective utilization of soil moisture that would otherwise be lost from bare soil. Obviously, there is much to be learned and the Lagaly field trial will hopefully unlock some answers for wheat producers in Canadian County.

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