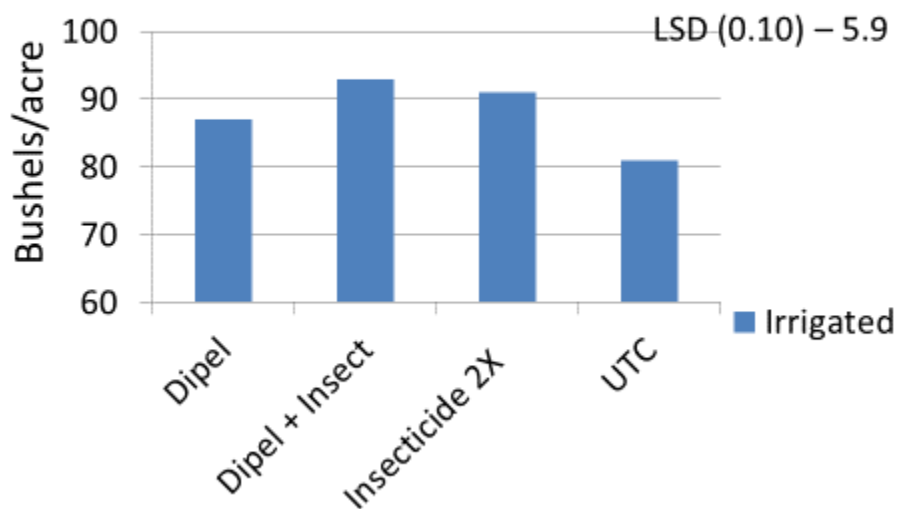


The Technology, Including Traits and Inputs, Needed to Produce a Modern Soybean Crop - James H. Long Jr. Ph.D.

Objective 1. Evaluate the use and effect of biologicals in soybean production. Evaluate existing and historical biological control methods such as Dipel to maintain low levels of pests such as pod worms. Also use indirect control methods such as trap crops. There are many biologicals now available for use including Dipel. Two years of research indicate that use of this biological in conjunction with insecticide can give season long control of soybean pod worms. Results in 2021 show a bump in yield (though not significant) using Dipel and then insecticide to control soybean pod worm. This is probably due to the soft effect of Dipel on beneficials. The use of this biological alone was better than the untreated check (UTC) though not as effective as using either Dipel + Insecticide or Insecticide twice. Research will continue in 2022 and then 3 year averages will be presented in the final report.

2021 Dipel Effect on Soybean Grain Yield

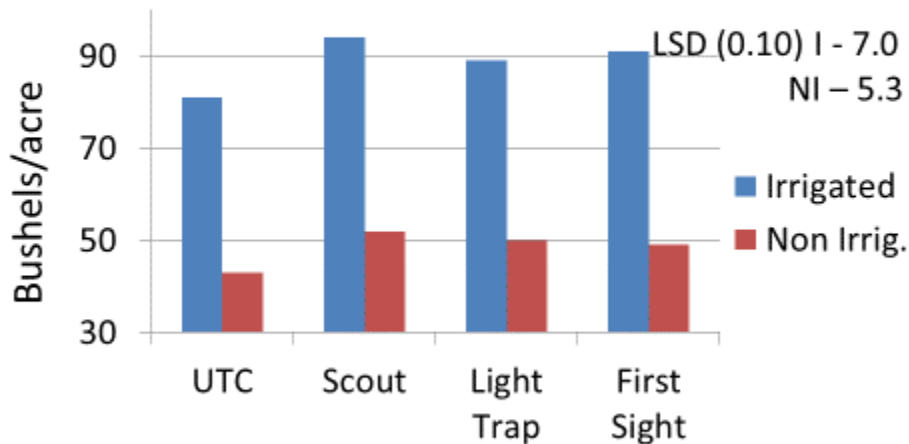


Objective 2. Development of practical IPM.

Use modern and historical techniques to determine when pests are established and populations are growing in an attempt to maintain low populations that will not reach treatment threshold levels. Research in 2021 indicates that we can get early detection of disease and insects through use of light traps and early observation, but scouting the crop gave best indication of damage to the crop and when to apply effective control. As scouting is labor intensive, especially when done season long, we may utilize early detection as an effective trigger to begin scouting. This method will be tested in 2022 with the four presented in the graph. All techniques gave better results than the untreated check (UTC). All treatments also worked whether the soybean were irrigated or not irrigated during the summer, although

Scouting during the entire season worked best. Results in 2022 will give 3 years of results that can be used for yield loss models.

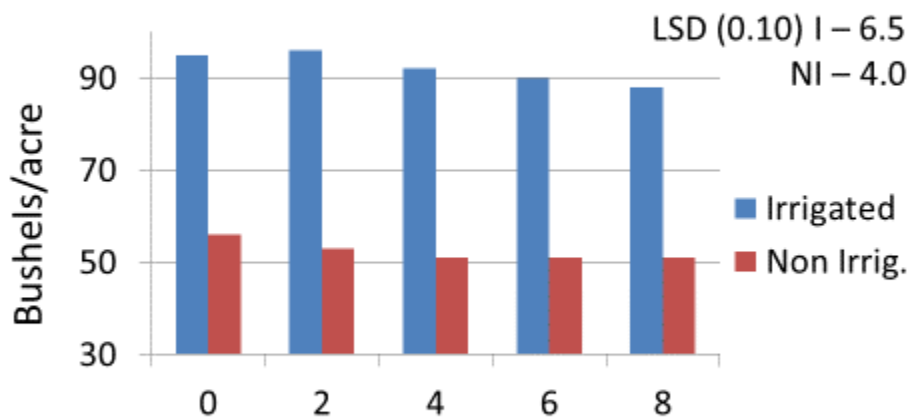
2021 Scouting Methods for Insects Treatment Effect on Soybean Grain Yield



Objective 3. Are scouting models effective?

Is current scouting effective in modern agriculture? Current methods determine threshold levels for damage, but we struggle with timeliness. Most modern producers have large acreages that may be spread over a very large area. These acres may also be planted at varying dates. It is useful for a producer to know how long they have to control insects, in particular, before yield losses become significant. This ties in with Objective 2 as there is about a 2 or 3 day lag before significant yield loss begins. A third year will be done.

2021 Days After Pod Worm Threshold Effect on Soybean Grain Yield



Objective 4. Are seed treatments the future?

We could talk for hours about seed treatment technology, effectiveness, and what could be accomplished with modern treatments. Research will be conducted to determine needs and trends, but in a word, YES, seed treatments work and are needed. We now have very complex seed treatments that include fungicide, insecticide, micro nutrients, biologicals, hormone, and other additive yield enhancing treatments. It is extremely difficult to know if everything is needed every year, but the concept seems to be to add everything that may eventually be needed to insure 100 bushel soybean. Our research indicates that seed treatments alone help with plant stands and can improve final grain yield, however, they work together with later foliar fungicide and insecticide treatments to insure the highest yield possible for the year. It is of interest to note that some states are now considering closer regulation of these treatments.

2021 Use of Seed Treatments with Later Foliar Fungicide/Insecticide Treatments

