INNOVATIVE CORN AND SOYBEAN PRODUCTION SYSTEMS FOR THE GREAT PLAINS

Gene Carstens, First Ag
firstag@gtmc.net

ABSTRACT

In an eight-year study of twin row planting, our intentions were to see if additional spacing per plant would allow more ear flex and more cubic foot of soil mass per plant. In the first five years of study, over 5000 acres were planted, in five states. In each of those five years, we continually added new and upgraded agronomic facts that we held to be true, i.e. PPI work on deeper P placement, Dr. Barnie Gordons work on high N starters, split applications and precisional placement of N, and numerous other concepts to be discussed. Upon addition of every concept, higher yields were achieved virtually every time.

Our initial planter placed the seed at a random spacing, with no singulation. We noticed that if the plants were spaced directly apart from each other, even though they were 8" apart, it had an effect of the size of the ear anywhere form 0.25 to 0.5 of an ounce. If the singulation was exact, consistent ear size was common. The first five years of study taught us that stalk quality improved when allowing more spacing per plant. We learned that, other than the planter, existing farming equipment, cultivator, hiller, combine, will work with paired rows. The average yield increases over the five year study averaged a 15 to 20 bushels on corn, 4 to 5 on beans, and 10 to 20 on sorghum.

We discontinued the twin row study for the simple fact that the planter that we had designed was not practical and we were not happy with only 10% yield increases. In 1998 we introduced strip till in our area. We felt at that time, that a perfect marriage was developing, strip till and twin row. Back to the drawing board we went with the intent of producing a planter that would singulate the seed and a unit that was not cumbersome yet very practical. In the last three years, we have planted over 3000 acres of irrigated corn and sorghum incorporating various populations and fertilizing techniques. The best results, (275+ corn), was achieved when we used high N starters, split applications of N along with positioning the N in a close proximity of the plants, lower populations, (26-28,000),with the majority of the phosphorous in the lower profile. A key point here, is from our studies in the late 70's and early 80's, we determined that the best ration of P in the topsoil was 1/3 in the top and 2/3 in the subsoil. We used P ratios of 25top/75sub, 50/50, 1/3/2/3, following these ratios with plant tissue tests and finally yield data. In a three-year study on the same field, the 1/3/2/3 ratio was consistently 18 bushels better and showed adequate P levels throughout the growing season.

It was interesting to note that in our plots this year, we consistently produced 300+ corn yields within areas of the fields. As the yields dropped within the field, we attempted to draw a correlation as to why the drop was occurring. The soil type was the same, fertility levels were the same, however the higher yielding areas had a PSI reading of less than 200. In the areas that dropped, the PSI readings were 350+.

As water quality and quantity is an issue in Nebraska, our thrust for the coming year is to develop a system that includes conservational tillage, nutrient management packages, and techniques that utilize less irrigation water. By usage of twin row and strip till and possibly strip

cropping, we can achieve the balance between the environment and the profitability of our producers.

SUMMARY

No doubt the jury is out on paired row planting, however by using the "solar corridor" in conjunction with all of the agronomic concepts that we know to be true, the probability of a pendulum swing in yields is close at hand. The concept of paired row planting and strip till falls within our belief of fertilizing and producing a plant within a cubic foot of soil mass. Instead of fertilizing an entire acre, we are fertilizing and changing the soil density immediately under the plant. In our future studies, we will incorporate highly prolific hybrids that produce a consistent second ear. A second ear, equal in size to the primary ear, at a lower population, (18-22,000) can mathematically produce 250+ corn. It may be possible to produce these yields on less water and fertility.