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On The Farm in Alabama

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ALABAMA CROPS
ALABAMA EXTENSION

In This Issue:

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Dekalb County's Jamie Roberts has been the overall Alabama soybean yield winner the last two years. He became the first Alabama grower in 2023 to break 100 bushels per acre non-irrigated. His Pioneer 42A96 yielded 101.3 bushels per acre.

Jamie Roberts Breaks the 100 Bushel Per Acre Soybean Barrier

Dekalb County farmer Jamie Roberts' goal in 2023 was to break 100 bushels per acre with his soybeans. A lofty goal since a non-irrigated soybean field had never broken the 100-bushel barrier in Alabama. He came close in 2022 with 97.11 bushels per acre, the highest non-irrigated soybean yield documented in Alabama, so he knew the prize was in sight if he had a good growing season. He accomplished his mission with his May 3 planted Pioneer 42A96 soybeans when he harvested 101.39 bushels per acre on October 4.

Jamie, the overall soybean yield champ in Alabama the last two years, happily proclaims, "We have never seen the high yields we had the last two years on my early beans. We've seen 75-80 bushels per acre in the past. My overall average on my early planted soybeans was 70+ bushels per acre. In the past we were happy with 40 bushels per acre with our bean yields." He believes planting earlier, in the first week of May, and better varieties have been key factors in his high yields.

Jamie consulted with neighboring grower Jared Wootten, who had seen better soybean yields by planting less seed per acre, so he adjusted his seeding rate down to 120,000 seeds per acre. "We cut our seeding rate back and I think it made a big difference. We save a good bit of money when we plant less seed per acre, especially when we plant 500 or 600 acres, but the main reason we reduced our seeding rate was our yields are better," explained Jamie.

Top soybean producers no longer treat soybeans as a low input and management crop. They pay more attention to planter setup on soybeans like they do on corn. Jamie makes sure his planter is in tip-top condition with his disc openers in good shape and his gauge wheels tight. He notes, "I am really picky on making sure my planters are set up right for soybeans and I keep my ground speed down. Four miles per hour is about as fast as I go. All our crops do better the slower I plant. When I speed up and the planter starts bouncing, I get an inconsistent stand and see more beans on top of the ground. Ground conditions are important also, I don't want to plant when it is too wet or dry."

Jamie used Sharpen and glyphosate at burndown and follows with Engenia and glyphosate post emerge for weed control. He applied Priaxor fungicide, boron, foliar feed and a pyrethroid for stink bug control at R3. Jamie's final advice for achieving higher yields is to try new things, you may fail, but you wouldn't get any better unless you are willing to try new things.

Alabama Soybean and Corn Association board member Brady Peek presents John Bevel with a plaque and jacket as this year's state winner of the 2023 Alabama Soybean Yield Contest in the late planted non-irrigated category with 94.28 bushels per acre on his June 1 planted soybeans.

John Bevel- Big Beans Meant Big Yield

The first thing Marshall County farmer John Bevel noticed when we did a yield check on his late planted soybean was how huge the beans were in the top pods. The large beans contributed to what John said were his "best beans ever". John's June 1 planted Becks 4991X2 yielded 94.28 bushels per acre, an Alabama yield record for late planted soybeans, and won the Alabama Soybean Yield Contest's late-season non-irrigated category. It was the second year in a row that John has won this category, but last year his award-winning entry averaged 57.42 bushels per acre.

Bean size is a key component in high soybean yields. Soybean seed size can range from 2,500-4,000 seed per pound, but most will average between 2,800-3,100 seed per pound. Your top growers are picking up a substantial amount of their yield by producing bigger beans. High soil potassium levels are the foundation for bigger beans. Soil sample results taken after harvest revealed that John's phosphorus and potassium were in the very high range even after harvesting 94 bushels per acre. John noted, "This field had always had a lot of chicken litter applied to it over the years, so this year I just applied commercial fertilizer." He applied 12 pounds of nitrogen, 40 pounds of phosphorus, 71 pounds of potassium, along with 21 pounds of sulfur, and five pounds of magnesium per acre.

John intended to plant this field about two weeks earlier, but the field was low lying and stayed too wet to plant until June 1. He points out that he was fortunate, and the field got timely rains all summer. John added, "I was extremely lucky the second week of September when the beans were filling out and got a total of three inches of rain in three or four showers when the rest of the county was dry. They would have probably been 50-bushel beans rather than 90 bushels if I wouldn't have got this rain." The combination of good moisture all summer plus the late rains helped fill out the crop and contribute to the high yields.

The field had been in pasture for years and had only two crops of soybeans and two crops of corn planted on it. John observed that new ground usually makes excellent yields the first few years they are put in crop land. Another factor that played a role in the high yield was an eight foot tall fence along the back of the field built by the neighboring farmer to keep deer on his property. This greatly reduced deer damage on his soybeans. Deer damage is the biggest yield limiting factor for many soybean growers.

John credits his weed control program for a season-long weed free field contributing to his high yield. He applied Glyphosate and Verdict at burndown and followed it at postemergence with glyphosate, Engenia, and Outlook. John notes, "The 4.9 variety also has plenty of time to make a crop. It is not too long or too short a maturity soybean. I believe the 4.9 maturity is one of the best beans to get a high yield with."

John didn't spray any fungicides because 2023 was a low disease year and said soybeans are really tough to harvest when he does apply a fungicide. Another key factor was dry weather at harvest with very few dews in the mornings, so he didn't have beans popping out at harvest. John notes that he had no seed quality issues since he was able to harvest timely. "Overall," John says, "it has been an exceptional soybean year. I am probably going to average 70 bushels per acre on my early planted soybeans."

Curtis Hobbs (left) became only the second Alabama soybean grower to break 100 bushel per acre on non-irrigated field. He was honored at the 2024 Alabama Soybean and Corn Association annual meeting as a member of the 100 bushel per acre club. He is picture with his grandfather Howard "Dickie" Hobbs, Jr. and his brother Corder.

Curtis Hobbs-High School Junior Competes with Elite Soybean Growers and Breaks 100 Bushel Per Acre

Seventeen-year-old Curtis Hobbs is the sixth generation of his family to farm the same land in Limestone County. Curtis proved in 2023 that despite his youth, he's proudly carrying on the family legacy. He became only the second Alabama soybean grower to have a documented yield of over 100 bushels per acre in a non-irrigated field. The high school junior recorded 100.71 bushels per acre with his April 29 planted Asgrow 47X2 soybeans.

Curtis credits his late father, Jessie Howard Hobbs III, a nationally recognized award-winning farmer who passed away suddenly in 2021, and his grandfather, Howard "Dickie" Hobbs, Jr. with instilling a strong work ethic and never give up attitude in him. Both were also active in their community and state farm organizations, which encouraged him to follow their example.

Curtis attended the 2023 annual Alabama Soybean and Corn Association meeting in Montgomery and listened to the top soybean growers discuss how they planted earlier and fertilized to produce high yields. It encouraged him to plant soybeans and achieve a high yield. Curtis said, "We grew soybeans but never competed in a yield contest before like we have corn. I learned at the meeting that crop rotation, chicken litter, and fertilization are all essential to high yields. But the most important practice I learned was to plant as early as possible." Valuable lessons it might have taken years to learn if he hadn't attended the state meeting.

Dickie noted, "If you are going for yield, you have to increase your bean size to get the weight." The field was soil tested after harvest and the potassium level was in the very high range. The high potassium level contributed to larger beans and the high yield. The Hobbs' consultant and scout Zach Ingram recommended Dimilin, boron, a foliar micronutrient mix, and Trevo TrZ fungicide at R1and then bifenthrin for stinkbug control, another shot of boron, and Revytek fungicide at R4. Zack observed the soybeans were impressive before harvest with 8-9 three-to-four bean pods on top.

Chad Henderson accepts the award from Brady Peek as 1st place winner in the irrigated soybean category.

Chad Henderson
100 Bushel Grower Offers Sound Advice

Henderson Farms' Chad Henderson is one of only four Alabama soybean growers to break the 100 bushels per acre yield barrier and is this year's winner of irrigated category at 86.87 bushels per acre. Henderson Farms is a partnership with Chad and his dad, Mike, and first cousin Stuart Sanderson along with Chad's son Jackson and Stuart's son Spencer. Chad attributes his high soybean yields to many factors including better varieties the seed companies continue to release and earlier planting dates. Chad's winning entry was Pioneer 47A64 planted on April 11.

Chad would list planter setup as another important component in his consistent high yields. He noticed he was getting as good or better yields with his on-farm research trials at 85,000-90,000 seeds planted per acre as he was with 130,000-140,000. He astutely notes, "It all depends on planter setup to get a good stand. We would like to plant 115,000 seeds per acre. I want a solid 95,000 to 100,000 plants per acre final stand. Now, if my ground conditions are rough or the weather conditions are not favorable, I will adjust my seeding rate upwards."

Late-season potash is critical to making high yields. Chad strives to hold his potash level above two percent in the tissue samples season long. He states, "It is not as easy to get chicken litter in my area as it is on other farms in north Alabama, but if it is affordable and feasible, I would like to apply two tons of chicken litter per acre. This year it was harder to get and more expensive, so we rotated it with conventional fertilizer. Then I run off soil sample results to calculate how much DAP or potash I am going to apply. I am also going to lean on 100-200 pounds of KMag per acre depending on whether the field is irrigated or not. Our fertility program is all based on our soil sample results and keeping a good balance of nutrients. I am also a big believer in boron as it helps in the reproductive stages."

A desiccant is essential to timely harvest. Chad had a lot of trial and error with harvest aids over the years but now Gramoxone is his choice to get his soybeans harvested in a timely manner. Chad says, "Henderson farms is blessed to have multiple combines because when we plant beans in April or May, there is a good chance we will be harvesting corn and beans at the same time. We don't get so hung up on harvesting corn that we don't harvest our beans when they get ready. We don't treat soybeans as a secondary crop anymore. When they are ready to harvest, you need to get them. We may shut down a corn combine to harvest soybeans, but that may be what it takes to get them out before they start shattering."

Chad makes a fungicide application and adds a pyrethroid for stink bug control at R3. He is aware that when corn dries down, stink bugs leave the corn to feed on something else and soybean and cotton are their prime meals late in the season. Chad observed, "I not so sure we don't get more advantage with the pyrethroid than we do with the fungicide in north Alabama where we have less disease pressure than they do to the south of us. We scout our soybeans because disease or stink bugs may come in late, and we may need another fungicide or insecticide application later. We don't want to keep the plant green at harvest with this late application but that is what we have harvest aids, such as Gramoxone, for."

Chad stays ahead of ryegrass with a fall application of Gramoxone or Roundup. He usually burndown with Roundup and starts clean at planting. His in-season program is Roundup and Engenia. He believes it is alright to ding the soybeans early but once they start flowering, he doesn't want to damage his soybeans from herbicides.

When I asked Chad if he had one piece of advice to give growers, he replied, "I would lean to having your planter in good shape and make sure the conditions are right to plant. I don't want to plant when it is too wet. I want my stand as uniform as possible. I wouldn't let my high yield soybean field be the first field to plant. I want to have my planter tuned up and ready to go."

Early-Season Non-irrigated	Farmer County	Variety	Planting Date	Harvest Date	Seeding Rate	Row Spacing	Yield Bu/Acre
1st	Jamie Roberts Dekalb	Pioneer 42A96	May 3	October 4	120,000	15”	101.39
2nd	Curtis Hobbs Limestone	Asgrow 47X2	April 29	October 16	150,000	15”	100.71
3rd	Will Mann Madison	Pioneer 48A14 Enlist	April 12	September 13	130,000	30”	85.21
Early-Season Irrigated							
1st	Chad Henderson Limestone	Pioneer 47A64	April 11	September 20	130,000	15”	86.87
Late-Season Non-irrigated							
1st	John Bevel Marshall	Becks 4991X2	June 1	October 18	148,000	15”	94.28
2nd	Dorman Grace Walker	Asgrow 48X9	June 4	October 16	140,000	30”	80.06
3rd	David Kellett Dekalb	Pioneer 46A35	June 15	October 5	140,000	15”	79.28

Key Production Practices for High Yields

I have worked with some of the South’s top soybean growers over the years and observed some of the common production practices they have used to achieve high yields. While there are many facets to producing high yields, below are some of the key commonalities. Hopefully, there will be some nuggets to help you reach higher yields and profits.

Early Planting Date

While the weather pattern does not always favor earlier planted soybeans, soybeans generally benefit from planting April through the first week of May in north Alabama, if soil conditions and favorable weather is forecasted, because:

- Flowering and pod set occurs during the longest days of the year
- Soybeans will have a longer reproductive period and greater seed filling potential
- Shorter plants and less chance of lodging
- Non-irrigated soybeans may benefit with better moisture for planting and early growth
- Potential for earlier harvest and more positive basis
- Less chance of some diseases such as soybean rust

The ideal temperature for rapid soybean germination and emergence is 77 to 86 degrees F but despite cold soil temperatures and slow plant growth during the seedling stage, there is a yield advantage from early plantings. The soybean varieties today have better seedling vigor and cold tolerance than in the past. Also seed treatments and in-row fungicides allow for earlier planting. Although soybean germination has been reported in soil temperatures as low as 36-39 degrees F, the planting depth temperature in the soil should be 55 degrees F or above with a warming trend forecasted for the next 5-7 days to plant soybeans early.

Risk to Early Planted Soybeans

The primary risk of early planted soybeans is a higher chance of seed decay and poor seed quality, especially with the indeterminate varieties, if we have prolonged periods of rain when the seed are maturing in warmer temperatures. The risks of poor seed quality is much higher in south Alabama with planting indeterminate varieties early. I would not consider planting the indeterminate varieties early in south Alabama unless irrigation is available. Other risks of early planted soybeans include: late spring frost and risk of replanting; risk of more seedling disease and Sudden Death Syndrome; the weather pattern may not always favor early planted soybeans; and they need to planted and harvested the same time as corn.

Plant Indeterminate Varieties

North Alabama growers have had the best success with the Group IV varieties (indeterminate). The indeterminate varieties suitable for north Alabama run from late Group III (we have had a 100 bushel per acre yield with Pioneer 38A98X) to the early Group Vs (the Group Vs is where the varieties switch from indeterminate to determinate).

Indeterminate varieties continue to have vegetative growth (new leaves and food factory) after flowering begins, which leads potentially to higher yields, compared to determinate varieties, who finish most of their vegetative growth before flowering begins. New vegetative growth ceases soon after flowering begins. Indeterminate varieties are not as photoperiod sensitive as determinate varieties which allow them to be planted earlier and take advantage of longer days during pod fill.

Larger Beans Lead to Higher Yields

Soybean seed size can range from 2,500-4,000 seeds per pound but will most often average between 2,800-3,100 seeds per pound. The high yield growers are picking up a tremendous yield increase by increasing their bean size. Many of them are in the low 2,000 or less seeds per pound. When Matt McMichen became the first Alabama grower to break 100 bushels per acre, his Pioneer 47T36 soybeans averaged 2,140 seeds per pound. The following photo is used by permission of Georgia farmer Alex Harrell, who set the world soybean yield record at 206.7997 bushels per acre last year. The beans on the left were 80+ bushels per acre soybeans while the beans on right were from his world record yield. Those soybeans averaged 1,600 to 1,700 beans per pound.

Bean Size Matters
Beans on left are 80+ bushels per acre soybeans while those on the right are from Alex Harrell's world record soybean yield of 206.7997 bushels per acre.
Photo: by permission of Alex Harrell.

What is a Key to Larger Beans?

A key to larger beans is a high soil fertility level, especially potassium (K), and having residual nitrogen (N). Most of the high yield growers have used chicken litter to build their soil nutrient levels. Rutgers University's Dr. R. Flannery's study published in 2010 Fluid Journal (The Official Journal of the Fluid Fertilizer Foundation) on the nutrient uptake of 101 bushels per acre soybeans demonstrated that it take much more N and about the same amount of phosphorus (P) and K as it does to produce 308 bushels per acre corn.

Total Nutrient Uptake

	N	P	K
101 bu/acre soybeans	548	136	344
308 bu/acre corn	345	140	375

I have had modest success in my trials by applying K and N at R1-R2, but high nutrient levels in the soil along with high residual N is a common component of high yield growers.

On average, only 50-60% of the nitrogen needed to by soybeans is provided by biological N fixation and the rest is provided by the addition of N (inefficient) and or residual N in the soil.[1] Once yields exceed 60-80 bushels per acre, the needs of the soybean plant will not be meet N fixation alone unless high levels of residual N are also available in the soil. Chicken litter use in north Alabama's soybeans has provided the residual N to support higher yields (100+ bushels per acre). Roughly 50-60% of the N in chicken litter is available the growing season it is applied but another 20% is available the following year and 10% the second year after application.

The other critical nutrient in achieving high yields is K. I took soil samples in our 100 bushel per acre growers and John Bevel's 94 bushel per acre yield after harvest in 2023. Their K levels were in the high range or, most often, the very high range. K levels in the leaf decline rapidly during pod fill as the K is translocated from the leaf to the beans. This severely degrades the photosynthesis capability of the leaf. The K level in the tissue samples should be maintained at 2% (at a minimum 1.75%) as long as possible to keep the photosynthesis process functioning at a high level.

High Yield Growers Are Paying More Attention to Planter Setup

Soybean growers have made outstanding yields with 15, 20, and 30 inch rows as row width plays a significant factor in weed control (the narrower the rows, the quicker the canopy cover for better weed control) but all these row widths are suitable for producing high yields. Your top soybean growers are paying more attention to planter setup and maintenance as they want a consistent stand with evenly spaced out seed. They emphasize singulation (how well the planter is metering seed with few doubles or closely spaced seed). The soybean plant can compensate for small skips but they are concerned closely planted seeds are costing them yield.

[1]Salvagiotti, F., Cassman, K.G., Specht, J.E., Walters, D.T., Weiss, A., and Dobermann, A. (2008). Nitrogen uptake, fixation and response to fertilizer N in soybeans: A review. Field Crop Research 108.

High Yield Growers Are Reducing Seeding Rate

Alex Harrell planted his world record yielding soybeans in 30-inch rows at 85,000 seeds per acre on April 5. His final stand count was 77,000 plants per acre. University of Illinois Professor of Crop Physiology and creator of "The Six Secrets of Soybean Success" Dr. Fred Below remarked at the recent Commodity Classic that the ideal plant population for most soybean growers is 100,000 to 120,000 plants per acre. The goal is to have more bushy plants, that are less susceptible to lodging, than tall, leggy plants. It would be prudent for Alabama growers not to drastically reduce their seeding rates from their current seeding rates until they had experience with lower seeding rates. Growers should be in that 100,000 to 120,000 plants per acre by planting 120,000 seeds per acre. A side benefit would be lower seed costs.

Scout Soybeans and Control Stink Bugs

Stink bugs are the number one pest for most soybean growers. Stink bugs prefer to feed on developing seed and usually don't reach threshold until 2-3 weeks after the R3 stage. Many growers will spray a fungicide at R1 or R2 stage and add a pyrethroid for stink bug control when there are few stink bugs in the field. They have a false sense of security and as corn dries down and stink bugs migrate to soybeans and cotton, they can be devastating to yield and seed quality. It would be wise to scout soybeans for insects and make a timely application when needed.

Apply A Desiccant for Timely Harvest

It is critical that early planted soybeans be harvested timely to avoid seed damage and yield loss. Gramoxone has been the preferred harvest aid for most growers. It should be applied on indeterminate varieties when at least 65% of the seed pods have reached a mature brown color or when seed moisture is 30% or less. Other harvest aids include Aim, Sharpen, and sodium chlorate.

A special thank you to the Alabama Soybean Producers Association and all the farmers that work with Extension and have on-farm soybean trials on