HIGHLIGHTS

of agricultural research

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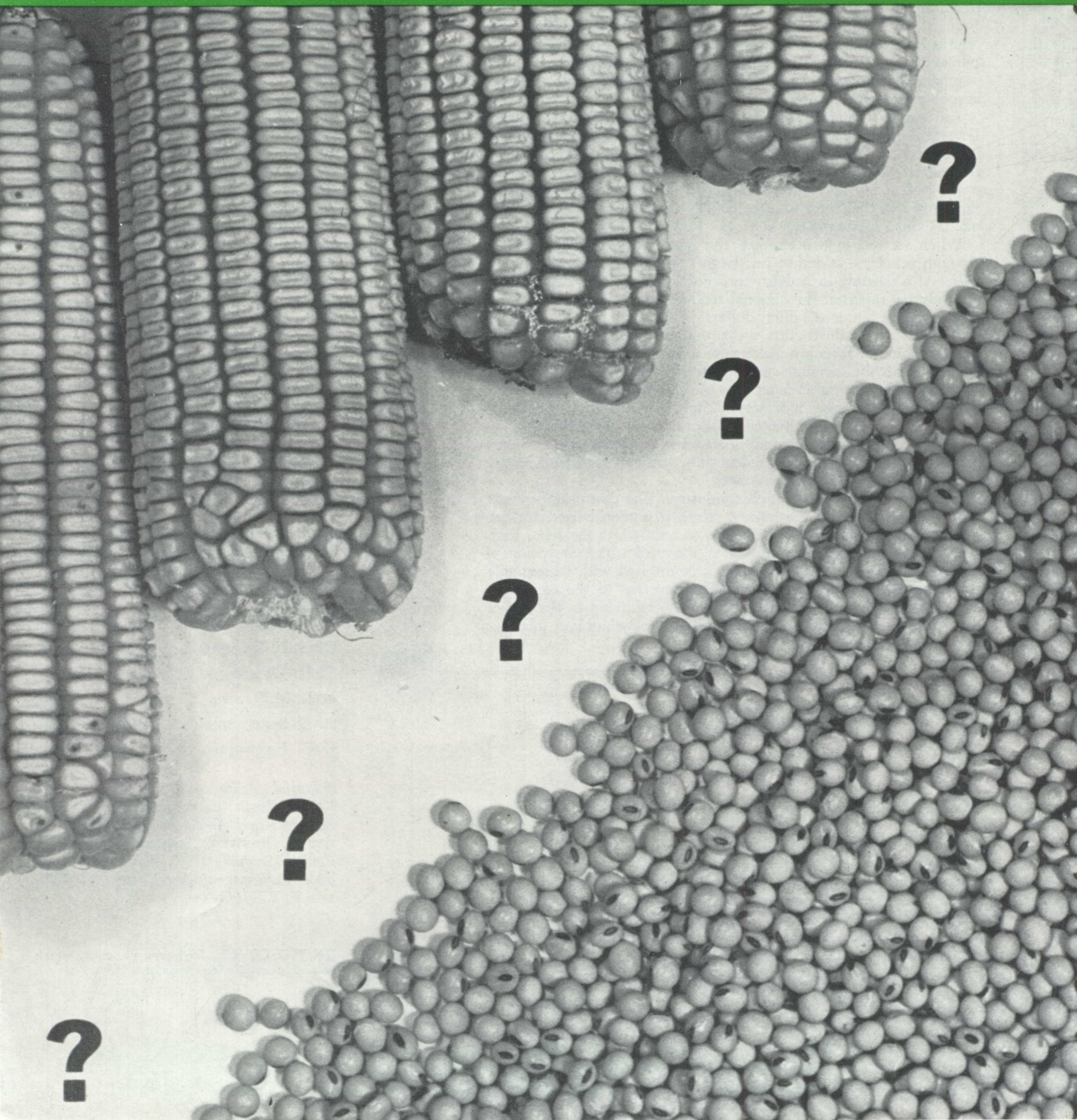
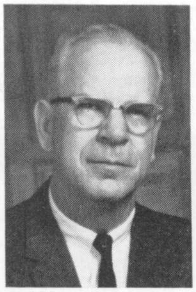
Agricultural Experiment Station
AUBURN UNIVERSITY



DIRECTOR'S COMMENTS



E. V. Smith

FROM THE BEGINNING OF TIME, food has generally been the first concern of man. Early man's migrations were probably prompted more by a search for food than by a sense of adventure. Similarly, a scarcity of food in older regions has, irrespective of the explanation given, been the cause of many wars.

Rapid adoption of the results of agricultural research and industrial development has brought profound changes in American food production since World War II. One change has been the dramatic reduction in the percentage of Americans who actually farm and produce food. For example, it is said that one farmer now produces enough food for himself and 48 other people.

An equally dramatic change has occurred in the food industry beyond the farm gate. Many of the functions that were previously performed by the farmer, or else by the consumer, are now performed by other segments of the food industry. As someone has aptly said, many agricultural operations have been moved off the farm and into the factories (e.g., poultry dressing and meat packing plants) and supermarkets.

When viewed in this context, the food industry – from farmer through retailer – is one of our largest and most important industries. At a meeting in Auburn earlier this year, a representative of the industry reported the national food basket to amount to an astounding one hundred billion dollars.

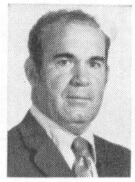
Farmers and industrialists are proud of the contributions that their combined efforts are making for a better America. They emphasize that the average worker in this country devotes only 16-17% of his disposable income to the purchase of food, probably the lowest percentage in history. They note the high quality of both raw and processed foods. Manufacturers are instituting increasingly strict quality control procedures to assure safety as well as quality. For the working housewife, there is a dazzling array of convenience foods in the markets.

All is not well in this complex industry. The cost-price squeeze continues to confound the farmer. Even in a mechanized agriculture, the farmer seems to be less able to compete in the labor market. The processor has his problems, many of which are common with the farmer's. Additionally, he is confronted with increasingly strict regulations designed for added protection to the consumer.

As Dr. Don Paarlberg said recently, "We're living in the age of the consumer." All segments of the food industry had best take this into account.

look for these articles

may we introduce . . .



Dr. Sidney C. Bell, author of the article on page 3 is a professor in the Department of Agricultural Economics and Rural Sociology. He does both teaching and research and has authored several Station publications and both technical and popular articles on economic analyses of farm production. He is a native of Hartford, Alabama, attended Howard College, Birmingham, now Samford University; University of North Carolina; Auburn University, where he received both the B.S. and M.S. degrees and Michigan State University, where he received the Ph.D. degree. Dr. Bell's principal field is farm management and production economics. His undergraduate major was agricultural administration and his graduate major was agricultural economics. Dr. Bell first became a staff member in 1956. He is a member of Phi Kappa Phi, Gamma Sigma Delta, and Omicron Delta Epsilon. He received the Senior Achievement Award for Gamma Sigma Delta in the fall quarter 1955.

HIGHLIGHTS of Agricultural Research

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ON THE COVER. Soybeans vs. corn, which one. See article on page 3.

SOYBEANS vs. CORN WHICH ONE?

S. C. BELL
Dept. of Agricultural Economics and Rural Sociology

A BIG QUESTION for farmers who wish to maximize profits during 1972 is whether to plant soybeans or corn on a large acreage of land. This is a question that requires careful figuring before making a decision.

One of the essential things to do if you are considering this question is to make an enterprise budget for each crop – soybeans and corn[1] The first major consideration would be to determine expected yield and next the expected price. In our soybean budget, we used 30 bu. per acre and $2.60 per bu. as a long-run expected price. These enterprise budgets are based on improved management practices. This means following the latest recommendations as to seed, fertilizer, and insect control. The yield of 30 bu. per acre and the price $2.60 gives total receipts of $78.00.

The next items are cash expenses. When preparing your soybean budget, use quantities and prices for these items. Our cash expenses total $32.66. But there are still other important items to consider – non-cash expenses. These are depreciation, housing, taxes, interest, and insurance for machinery and equipment. They total $9.40 in the budget leaving a net return to land, operator's labor, and management of $35.94. All items have been paid except rent for land, and charge for operator's labor and management.

In our corn budget, we used an estimated yield of 65 bu. per acre with an expected price of $1.30 per bu. giving gross receipts of $84.50 per acre. The cash expenses for the corn enterprise budget were $37.79 and the non-cash expenses were $9.85 leaving a net return to land, operator's labor, and management of $36.86.

When comparing the two enterprise budgets, the corn has $.92 higher return per acre than soybeans. Of course, there

[1] Enterprise budgets for soybeans and corn available through your local county Extension office.

This field of soybeans looks like sure money in the pocket.

are still items that should be considered before making a decision whether to plant soybeans or corn. One of the first things is the availability of markets. Another is storage facilities if markets are not nearby. Also, the risk of production in your area, if you are not now producing one of these crops, to determine if corn or soybean yields fluctuate much from year to year.

The two budgets discussed were based on one estimated yield for soybeans and corn and one price for each crop. It might be that these yields and prices will not fit your circumstances, therefore, two tables are included that might be of benefit to you when trying to decide which crop to plant.

Table 1 indicates the yield of soybeans required under various prices of corn and soybeans to have the same net return of 65 bu. of corn per acre.

TABLE 1. BREAK-EVEN YIELD OF SOYBEANS WHEN COMPARED TO 65-BUSHEL YIELD OF CORN

Price of soybeans	Price of corn per bushel						
	$ .90	$1.00	$1.10	**$1.20**	$1.30	$1.40	$1.50
	Soybean yield required						
Dol.	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*
1.75	30.2	34.0	37.7	41.4	45.1	48.8	52.5
2.00	26.5	29.8	32.9	36.2	39.5	42.7	45.9
2.25	23.5	26.5	29.3	32.2	35.1	37.9	40.9
2.50	21.2	23.8	26.4	28.9	31.6	34.2	36.8
2.75	19.2	21.7	23.9	**26.3**	28.7	31.1	33.4
3.00	17.6	19.9	21.9	24.1	26.3	28.5	30.6
3.25	16.3	18.3	20.3	22.3	24.3	26.3	28.3

The way to use this table is first to estimate your expected price of soybeans and corn. For example, estimate soybeans price at $2.75 per bu. and corn at $1.20. First come down left column under price of soybeans to $2.75, then locate column with $1.20 price for corn. Draw a line over from price of soybeans and a line down from price of corn and where these lines intersect will give you the yield of soybeans required to have the same net return as the 65 bu. of corn. In this example it is 26.3 bu.

Another way, Table 2, of comparing these two crops, if corn yield was 62.9 bu. per acre, you would need to receive $1.40 per bu. in order to equal 30 bu. of soybeans at $2.75 per bu. Both tables are based on the soybean and corn budgets discussed.

TABLE 2. BREAK-EVEN YIELD OF CORN ASSUMING SOYBEAN YIELD OF 30 BUSHELS PER ACRE

Price of corn	Soybean price per bushel						
	$1.75	$2.00	$2.25	$2.50	**$2.75**	$3.00	$3.25
	Corn yield required						
Dol.	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*
.90	64.5	72.9	81.2	89.5	97.9	106.2	114.5
1.00	58.8	65.6	73.1	80.6	88.1	95.6	103.1
1.10	52.8	59.6	66.4	73.3	80.1	86.9	93.7
1.20	48.4	54.7	60.9	67.2	73.4	79.7	85.9
1.30	44.7	50.4	56.2	61.9	67.8	73.5	79.3
1.40	41.5	46.8	52.2	57.6	**62.9**	68.3	73.6
1.50	38.7	43.7	48.7	53.7	58.7	63.7	68.7

You interpret your answer of which crop you should produce in terms of whether you think your corn or soybean yield will be above the yield in the table required to break even.

If your yield of soybeans is not close to 30 bu. then you can use a mathematical formula to compute the break-even yield of corn. This formula is:

$$Y_c = (P_s \times Y_s - C_s + C_c) \div P_c$$

where Y_c = yield of corn per acre; P_s = price of soybeans; Y_s = yield of soybeans per acre; C_s = cost to produce 1 acre of soybeans; C_c = cost to produce 1 acre of corn; and P_c = price of corn.

Farmers have been making and will continue to make decisions involving the economics of soybeans relative to competing crops. Tremendous changes in acreage and production as well as shifts in areas of production have occurred in recent years. Changes will likely continue.

Sorghum-Sudan Hybrids for Grazing Beef Steers

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SORGHUM-SUDAN HYBRIDS are grown widely in the South for temporary grazing. These crops make large forage yields and their potential stocking rates are high.

Digestible dry matter (DDM) of a sorghum-sudan hybrid varied from 66% to 72% in a digestion trial conducted at Auburn using the nylon-bag technique. Coastal bermudagrass hay ranged from 36% to 48% DDM in the same trial. DDM declined seasonally, regardless of growth stage. The high DDM values obtained in the metabolism trial suggested that cattle should perform well while grazing sorghum-sudan.

In a 3-year Alabama study, lactating dairy cows grazing sorghum-sudan produced an average of about 41 lb. of milk daily and maintained a lactation persistency above 94%. These dairy cows received about 50% of their daily allowance of nutrients from a concentrate mixture. However, in another Alabama experiment, beef steers grazing a similar forage, pearlmillet, made daily gains of only 1 lb. per steer. This rate of gain is similar to that usually made by steers grazing warm-season perennial grasses. Research reported here was conducted to determine the effect of supplemental grain feeding on rate and cost of gain of steers grazing sorghum-sudan.

Sorghum-sudan was planted on a prepared seedbed early in May at the Tennessee Valley Substation in each of 3 years. Mineral fertilizer was applied according to soil test. Nitrogen at the rate of 50 lb. per acre was applied at planting and again in July. Yearling Hereford steers, weighing about 675 lb. at the start of the test, grazed the pastures with the "put-and-take" system of pasture management. One group of steers on pasture was fed a blended concentrate mixture at the rate of 1% of live weight daily whereas the other group grazed without supplement. Two-acre pastures were used with supplemented steers on one area and non-supplemented steers on the other. Cattle in each treatment group were rotated between paddocks at 14-day intervals to minimize pasture differences. Steers were sold as feeders at the end of the grazing season each of the first 2 years, but went directly to slaughter after the third grazing season. Slaughter data were collected to determine differences in carcass composition associated with supplemental feeding.

The grazing seasons were 77, 65, and 89 days for the 3 years, respectively. The steers without supplement on grazing gained an average of 1.1 lb. daily, while those receiving supplemental feed gained 1.6 lb., see table. Feeding the blended mixture increased daily gain by approximately 50%, but steers consumed an average of 14.4 pounds of the ration per pound of increased gain. The dressing per cent was slightly higher in the feed group and carcass grades averaged high Standard and low Good for non-supplemented and supplemented groups, respectively.

Dry matter (DM) content of the forage varied over the season from 11% to 27%, but there was no apparent association between animal gain by period and DM content of the forage. Daytime air temperatures were high (upper nineties) during the summer, and this may have contributed to low daily gain. Total gain per acre by non-supplemented steers averaged 210 lb. during this 3-year test. Gain resulting from an acre of grazing plus that from supplemental feed amounted to 335 lb.

Although it had high potential carrying capacity for short periods, sorghum-sudan pasture was generally unsatisfactory for growing steers. The large fluctuation in forage growth caused by variable soil moisture made it difficult to maintain a proper stocking rate, even with rotational grazing, and this resulted in forage waste.

The establishment cost of approximately $45 per acre for sorghum-sudan and the expected grazing season of about 75 days from such a crop make it unattractive economically as grazing for yearling beef steers.

AVERAGE PERFORMANCE OF STEERS ON SORGHUM-SUDAN PASTURE, 1968-70

	Grazing only	Grazing + supplement
Animal performance		
Av. stock rate, animals/A./day	2.8	2.9
Initial wt. of tester steers, lb.[1]	673	669
Final wt. of tester steers, lb.[1]	756	789
Total beef gain per acre, lb.[2]	210	335
ADG of tester steers, lb.	1.1	1.6
Supplemental feed		
Av. daily feed per steer, lb.	-----	7.0
Feed/lb. increased gain, lb.	-----	14.4
Carcass Data		
USDA grade	high Standard	low Good
Dressing percentage	53.6	56.3

[1] Tester steers were animals that remained on pasture throughout the season.
[2] Per acre gain is total for tester steers and additional steers. Gain for the supplemented group includes that resulting from harvested feed and grazing.

Fertilizer Handling Takes Time

E. S. RENOLL

Department of Agricultural Engineering

HANDLING OF FERTILIZER during planting can seriously influence the number of acres planted per day. Research studies show that in some planting operations as much as 20% of the total planting time is used in handling fertilizer. Obviously there is room for improvement in such situations.

The importance of fertilizer handling and its influence on machine capacity are revealed in the results from two recent studies.

One study concerned handling of dry fertilizer for a 4-row planter using two different application rates, Table 1.

TABLE 1. FERTILIZER HANDLING TIME FOR A 4-ROW PLANTER USING TWO FERTILIZER RATES

Plot	Application rate	Chemical analysis	Planter capacity
	Lb./A.		*A./hr.*
A	600	5-10-15	4.2
B	300	10-20-30	4.6

The test involved planting 20 acres of cotton in two plots of 10 acres each. Plot A used a 5-10-15 analysis fertilizer at the rate of 600 lb. per acre. Plot B used 10-20-30 at the rate of 300 lb. per acre.

The planting supplies were transported in the field by truck. After the tractor and planter turned at row ends, the truck was driven near the planter. The fertilizer was hand carried in bags directly from the truck to the fertilizer hoppers. A three-man crew handled the planter and supplies.

Changing the fertilizer rate from 600 lb. to 300 lb. per acre increased the 4-row planter capacity by about 4 acres per day. The 10-20-30 also had a slight price advantage – its cost was less per pound of nutrient than that of 5-10-15.

Keeping a supply of fertilizer material near the field-use area is sometimes a problem. If the machine supply source is not near the use area, travel back and forth to the supply can consume much time. The importance of supply location is shown in results from a study of applying anhydrous ammonia, Table 2. The operation involved a 4-row applicator placing 90 lb. of nitrogen per acre at a speed of 3.7 m.p.h.

TABLE 2. ANHYDROUS AMMONIA APPLICATION TIME

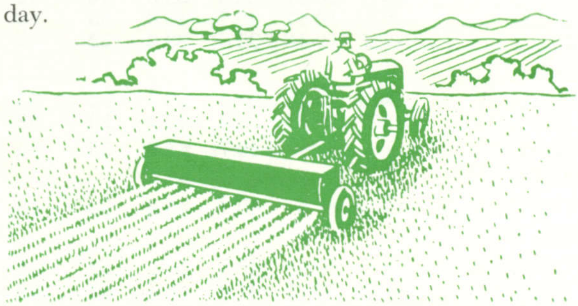
Operation	Per cent of total time used to fertilize fields	
	Field X	Field Y
Refill tank	15.8	16.1
Travel to refill tank	5.5	20.5

In Field X the supply tank was positioned near the field, thus travel distance to the supply tank to refill the application tank was no serious problem. It used only 5.5% of the total field time. For Field Y the supply tank was ½ mile away and used 20.5% of the total field time. Elimination of the extra 15% travel time for Field Y would increase the applicator capacity 6 to 7 acres per day.

A third study involved the handling of fertilizer in two bag sizes, 50 lb. and 100 lb. The study included a 4-row cotton planter applying fertilizer at the time of planting. One man handled the fertilizer. Fertilizer was transported in the field by truck and was hand carried directly from the truck to the planter.

Handling fertilizer in 50-lb. bags required 1.13 man-minutes per 100 lb., while 100-lb. bags required .9 man-minute per 100 lb. This indicates an increase in time but not a doubling of it. At a fertilizer rate of 400 lb. per acre this is an increase of 1.0 minute per acre if one man is used to handle fertilizer.

A 4-row planter with a capacity of 4.0 acres per hour while using fertilizer in 100-lb. bags and applying 400 lb. per acre would be limited to 3.75 acres per hour if 50-lb. bags were used. This is a reduction of 6% or about 2 acres per day.



From this study it appears that planter capacity is influenced by fertilizer bag size. Small bags might have some advantage from the standpoint of ease of handling and the degree of fatigue while handling fertilizer. This was not evaluated in the study.

The following conclusions can be drawn from the fertilizer handling studies:

1. Using high-analysis fertilizer and the corresponding lower rate per acre reduced fertilizer handling time and increased planter capacity.

2. Having the fertilizer refill supply as near to the field-use-area as possible reduced travel time and increased applicator capacity.

3. Handling fertilizer in 100-lb. bags for a 4-row planter required less time per acre than 50-lb. bags.

Ransom Soybean – Group VII Variety Compared with Bragg at Seven Locations

D. L. THURLOW, *Department of Agronomy and Soils*

Ransom (left) and Bragg (right) soybeans, planted June 14, 1971, at Prattville Experiment Field, show comparative lodging at harvest time.

NEW CROP VARIETIES aren't always better, but the new Ransom variety of soybean showed promise in its first year of testing in Alabama.

Ransom fits in maturity group VII (groups are numbered according to maturity, higher numbers being later.) This group accounted for about 40% of 1971 acreage in Alabama, with Bragg the leading variety in the group. In fact, Bragg was planted on 178,000 acres, or 95% of Group VII plantings. Thus, there seems to be a place for another good variety of this maturity.

COMPARISON OF BRAGG AND RANSOM SOYBEANS AT SEVEN LOCATIONS, 1971

Location and planting date	Maturity[1]		Yield/acre		Plant height		Ht. of 1st pod		Lodging[2]	
	Bragg	Ransom	Bragg	Ransom	Bragg	Ransom	Bragg	Ransom	Bragg	Ransom
			Bu.	Bu.	In.	In.	In.	In.		
Crossville										
May 4	10-17	10-17	52.6	58.0	44	32	7.3	6.3	3.8	2.3
June 7	10-19	10-17	45.7	46.8	35	40	8.0	9.0	3.3	3.3
July 2	10-20	10-18	32.0	39.2	32	31	6.5	6.5	2.8	1.0
Winfield										
May 20	10-18	10-18	33.5	28.9	42	33	7.8	5.8	1.0	1.0
July 1	10-27	10-31	38.9	42.1	28	32	4.0	4.5	1.0	1.0
N. Ala. av.			40.7	43.8	36	34	6.7	6.4		
Tallassee										
May 21	10-23	11-3	40.7	45.6	36	26	7.0	5.0	2.3	1.0
Prattville										
May 7	10-19	10-23	48.3	50.1	40	32	5.5	4.3	1.3	1.0
June 14	10-25	10-25	41.0	45.3	32	29	2.5	3.3	3.0	1.1
Marion Junction										
May 19	10-16	10-17	29.9	38.4	40	35	7.0	6.0	2.5	1.6
June 8	10-19	10-21	32.2	35.6	35	31	6.0	6.0	2.2	1.2
June 29	10-21	10-22	24.6	26.6	28	23	4.8	3.8	1.4	1.2
Cent. Ala. av.			36.1	40.3	35	29	5.5	4.7		
Brewton										
May 18	10-8	10-12	31.2	47.5	40	31	6.8	5.3	1.3	1.3
June 22	10-8	10-8	20.9	28.0	28	24	3.0	3.8	2.3	1.0
Fairhope										
June 9	10-20	10-26	50.0	53.5	38	24	6.5	4.0	1.0	1.0
S. Ala. av.			34.0	43.0	35	26	5.4	4.4		

[1] Maturity considered date when pods were dry and most leaves had dropped (under most conditions stems were also dry).

[2] Lodging ratings are on a scale of 1 to 5: 1—almost all plants erect; 2—all plants leaning slightly or a few down; 3—all leaning moderately or 25 to 50% of plants down; 4—all leaning considerably or 50 to 80% down; 5—all plants down badly.

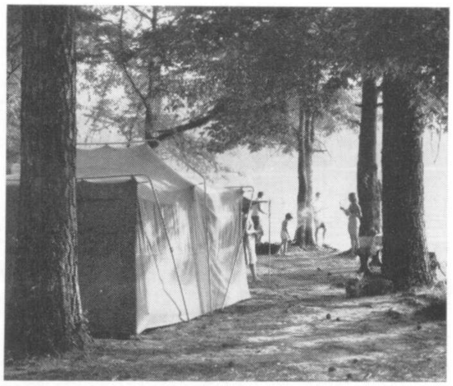
Developed jointly by North Carolina Agricultural Experiment Station and USDA, Ransom was jointly released in 1970 by USDA and southern experiment stations. It is best adapted to well-drained Coastal Plain soils. It has resistance to purple seed stain, seed mottling, bacterial pustule, wildfire, and target spot. It is moderately susceptible to phytophthora root rot and **rootknot nematode.**

Bragg and Ransom were in last year's variety tests at seven outlying units of Auburn University Agricultural Experiment Station. Yield, maturity date, plant height, height of first pod, and lodging from three planting dates of both varieties are given in the table. Rainfall distribution was good at all locations, although it was probably excessive at Marion Junction.

Ransom matures at about the same time as Bragg. When planted early, Ransom is considerably shorter than Bragg, but this difference diminishes with later planting. Pods are set slightly lower on Ransom. Although Ransom had some lodging in early plantings at Crossville and Marion Junction, it was considerably less than Bragg at most locations. Comparative lodging of the two varieties is illustrated by the photo.

Last year's yield data show that Ransom produced 3, 4, and 9 bu. per acre more than Bragg in northern, central, and southern Alabama, respectively.

Ransom cannot be fully recommended on the basis of a single year's data. However, its performance justifies limited planting on a trial basis, especially in central and southern Alabama.



Many Alabama campers are hoping for more developed desirable camping sites.

CAMPERS CAMPERS EVERYWHERE but not a SPOT TO CAMP

E. W. McCOY and A. B. SHERLING
Dept. of Agricultural Economics and Rural Sociology

PARTICIPATION in outdoor recreation is increasing faster than population growth and camping has increased even faster than other forms of outdoor recreation. One seldom drives on Alabama's major highways without seeing many camping vehicles. Unfortunately most of these vehicles are traveling through Alabama to recreational sites in surrounding states.

Growth in camping at the national level has been phenomenal. The manufacture of self-propelled motor homes rose 400% from 1965 to 1968. The sale of travel trailers quadrupled and the production of truck-mounted campers grew 15 times. The overall increase in recreational vehicles during 1968 alone was 24%. Evidence indicates that the supply of campground facilities increased by no more than 10%. The number of camping places available and number of people who desire to camp are out of balance.

The national camping situation is in imbalance and the supply of camping facilities in Alabama is bleak. A survey of recreational areas determined the availability of camping in 1968. Managers of 255 areas reported camping available; however, only 230 of these had acreage for camping within their own boundaries. Of the 230 areas with acreage for camping, 54 had no developed facilities. The reported camping accommodations in 1969 are indicated in the table.

Camping areas ranged in size and quality from an area with one primitive campsite to another with 700 fully developed trailer/tent sites. One of Alabama's "best" campgrounds, as designated by the Alabama Bureau of Publicity, has no camping facilities and another consisted of excess space in a mobile home park. Few parks are equipped to accommodate travel trailers either because of inadequate wiring, plumbing, or layout arrangement of campsites.

NUMBER OF CAMPSITES AVAILABLE IN ALABAMA BY RATING OF SITE AND TYPE OF CAMPING, ALABAMA, 1969

Type of site	Rating of site			Total sites
	Primitive	Semi-modern	Modern	
Tent camping only	461	893	559	1,913
Trailer/tent camping	477	3,222	2,248	5,947
Total sites	938	4,115	2,807	7,860

Source: Vol. 4, Summary of Outdoor Recreation Resources in Alabama by Regions and Districts, Alabama Statewide Comprehensive Plan, Montgomery, Alabama, May 1970.

Estimates of within and out-of-state demand for camping facilities indicated approximately 12,500 sites would receive heavy utilization during summer weekends. Even this number of sites would be inundated during "peak" demand periods such as 3-day holidays, the Fourth of July, and Labor Day. Ignoring the quality of the existing sites, there is a pressing need for about 4,500 additional quality campsites in Alabama.

Many sites reported as semi-modern are in reality picnic areas or play fields where camping is allowed. Toilet facilities and water are available at picnic shelters. An estimated 2 to 3 thousand of the existing sites are camping areas in name only. The discomforts, inconvenience, and general undesirability of these sites limit their use by campers. The advertisement of these areas as campsites has hurt the image of all camping areas in Alabama. There are basically three types of campers. First, the primitive campers who desire to backpack, canoe, or boat into wilderness areas for their camping experience. A pit toilet and a place to dispose of garbage generally will suffice to meet their needs. The trip to the site and the relative isolation of the site are additive aspects of the recreational experience. The second group consists of recreational campers who engage in camping the year around. While they also engage in other recreational activities at a camping area a major portion of the recreational experience is tied to camping. The camping equipment owned by group campers is generally compact and suited to a variety of sites. The third and fastest growing group includes the accommodation camper. This group uses camping as a means to minimize costs of overnight visitation to recreational areas and simultaneously to maximize the amount of recreation at a site. It is the third group that requires many more services at the camping areas and, for Alabama, this group consists primarily of out-of-state visitors. Many modern travel trailers and campers have electrical requirements of a small home. Campers have air conditioning, refrigerators, electric frying pans, lights, radios, television, electric razors, and other electric appliances. In addition the campers have sinks, showers, and toilets. The campground needs to provide electrical hookups, water, and sewage connections for full utilization of the camper. In addition, the camper may be quite long or heavy requiring smooth interior roads and leveled pull-through campsites.

With the new breed of campers who take the comforts of home with them, a campground operator can no longer point in the general direction of the woods and say, "camp anywhere." There is an increasing demand for camping facilities close to travel routes and recreation areas. The camping family is willing to pay $4 or $5 per night for facilities that meet their needs. Cost and returns analysis indicate properly located camping facilities with developed sites can be profitable for the private operator.

Many new camping areas are under construction or proposed by various levels of government. These camping areas are located within National Forests, State Parks, Corps of Engineers impoundments, and at other governmental areas. Many campsites could be located close to Interstate Highway exits to provide overnight facilities for campers traveling to recreation areas. Provision of this type of camping facility logically falls within the scope of private enterprise. If enough quality facilities are built so campers can experience and report a pleasurable camping experience in Alabama, people may soon see campers traveling to instead of through the State.

Managing Sericea for Forage

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NEW IMPROVED SERICEA lespedeza varieties are utilized for both hay and grazing and require special management to maintain stands and productivity. This is not true of common sericea because it is not usually grazed.

Serala and Interstate, two sericea varieties developed at Auburn University Agricultural Experiment Station, were studied in a management experiment for 2 years at Prattville Experiment Field. Serala is a tall fine-stemmed variety. Interstate is short, fine stemmed, and profusely branched. The latter was developed for planting on highway cuts and similar uses, but it has promise as a forage crop. These varieties were planted on prepared land in March 1968 and were not harvested the first year. Three cutting treatments were used as shown in the table. In each case the earliest harvest was made in April and the latest one in August.

Tests Used

Chemical analyses of forage were made for tannin at each harvest. During the growing season roots were sampled monthly and analyzed for total available carbohydrates to measure food storage within the plant. Dry matter digestibility was used as a measure of forage quality. Nylon bags containing forage samples were placed in the rumens of fistulated steers for 24 hours and digestibility was calculated on the basis of undigested matter remaining in the bags.

FORAGE YIELD BY CUTTING TREATMENT AND TANNIN CONTENT OF LESPEDEZA

Harvests per year	Stubble height	Dry forage per acre 1969	Dry forage per acre 1970	Tannin in dry forage
	In.	*Tons*	*Tons*	*Pct.*
Serala				
2	1½	4.47	5.00	5.7
4	1½	2.65	1.95	6.9
4	5	1.78	2.33	6.9
Interstate				
2	1½	5.07	4.83	7.4
4	1½	2.12	1.70	7.5
4	5	1.26	2.39	7.5

Forage Yields

Forage yields were highest (4 to 5 tons/A.) when sericea was cut for hay twice each year. Interstate was about as productive as Serala. Cutting four times each year reduced the forage yield to half that produced by the 2-cut treatment. First year yields with four cuts per year were highest where short stubble was left. However, the reverse was true the following year when plants cut to a 5-in. stubble height were most productive. At the end of the second harvest year, stands of both varieties exceeded 80% when cut 4 times to a 5-in. stubble. In contrast, sericea cut four times each year to a 1½-in. stubble had stands of only 50% for Interstate and 60% for Serala.

Food reserves, or lack of them, in the roots probably account for the stand loss. Root carbohydrates were reduced by harvesting four times a year as compared to twice a year, Fig. 1. Leaving a 5-in. stubble resulted in more root carbohydrates than where a 1½-in. stubble was left. Both varieties gave a similar response. These results suggest that where sericea is to be grazed, a high stubble should be maintained to permit the plants to accumulate root reserves. It is likely that where sericea is grazed closely for several years, stands will deteriorate and become weedy.

Forage Quality

Forage quality was affected by cutting management, Figure 2. Since results for digestible dry matter (DDM) were similar for both Serala and Interstate, the data were averaged. DDM of forage cut twice a year averaged 50% or less. Sericea cut four times a year was higher in quality, averaging over 55% DDM. The higher DDM of forage in late summer was caused by crabgrass, with a larger amount of this weed in sericea cut four times to 1½-in. stubble.

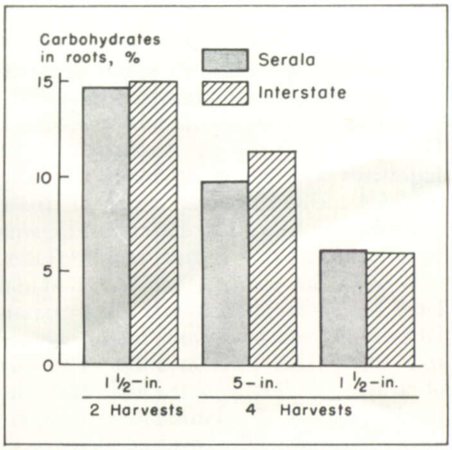


FIG. 1. Carbohydrate storage in sericea roots in August of the second harvest year.

Tannin Content

Both Serala and Interstate are high-tannin varieties. However, Interstate was higher in tannin than Serala, see table. Sericea leaves contain more tannin than stems. This accounts for the leafier Interstate being higher in tannin than Serala. Tannin content of both varieties increased from April to June.

In this study, management affected sericea stand persistence, forage yield, and quality. Highest yields were obtained by cutting for hay twice a year, but forage quality was higher when cut 4 times annually. High stubble resulted in better stands and forage yield than short stubble when cut 4 times annually.

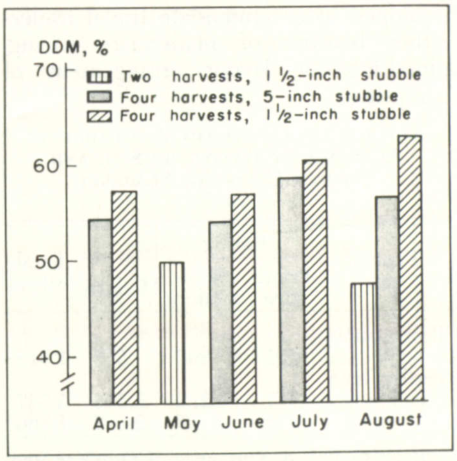


FIG. 2. Digestible dry matter (DDM) of sericea forage as affected by stubble height and cutting frequency. Average of Serala and Interstate.

THE "INS and OUTS" of ALABAMA AGRICULTURE

J. H. YEAGER, *Department of Agricultural Economics and Rural Sociology*

THE INS AND OUTS of Alabama agriculture are not only important as products produced and income generated, but supplying the inputs used in production is also big business. There are many purchased services that producers at one time provided themselves or did not use because such services were not a part of the then known science and technology of agricultural production. Growth of the "input part" of agribusiness has been phenomenal.

Input Changes

One of the fastest growing inputs in Alabama agriculture is capital. Capital is used in the form of real estate, machinery, livestock, and operating items. Certain capital items such as buildings and machinery are subject to depreciation.

Depreciation, as an expense incurred by farmers, increased 116% from 1960 to 1970, see chart. Total depreciation was almost $120 million in 1970 or almost 20% of all production expenses.

Also associated with increased use of capital is the expense of interest on farm mortgage indebtedness. This expense item increased more proportionally from 1960 to 1970 than any other production expense. Alabama farmers paid $23.6 million as interest on farm real estate mortgages in 1970 but only $8.8 million in 1960. Higher interest rates and a greater amount of outstanding indebtedness caused this significant change. It is impossible for farmers to operate in today's complex business world without adequate credit and capital resources.

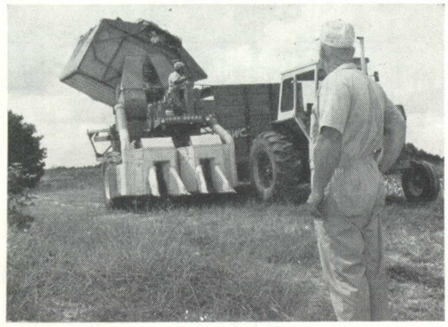
Another expense associated with farm capital is repairs and operation of capital items. This expense increased from almost $50 million in 1960 to almost $75 million in 1970, or 51%. Included in this amount were repairs and maintenance of buildings and operation of motor vehicles and farm machinery, including petroleum fuel and oil used in the farm business. Taxes on farm property increased 65% from 1960 to 1970, from $7.2 million to $11.9 million.

Other Inputs

The largest single farm expenditure item for the past several years has been feed. Alabama farmers paid $173.5 million for all feed bought in 1970 compared with $98 million in 1960, an increase of 77%. Increased feed expenses are associated with the growth of broiler and egg production and expansion of certain livestock enterprises. For the past several years Alabama's deficit of feed grains has increased and it appears that greater deficits will occur in the years ahead.

Fertilizer and lime expenses by Alabama farmers in the past 10 years have changed less than most other items. Alabama farmers spent $44.5 million for fertilizer and lime in 1970, which was about 7% of total farm production expenses. Seed expenses, including that paid for bulbs, plants, and trees, were $8.7 million in 1970, up about $1.8 million over 1960.

The amount spent for hired labor by Alabama farmers in 1970 did not differ greatly from the amount spent in 1960. Although important as a major expenditure on many farms, hired labor accounted for only about 7% of total farm expenditures in 1970.



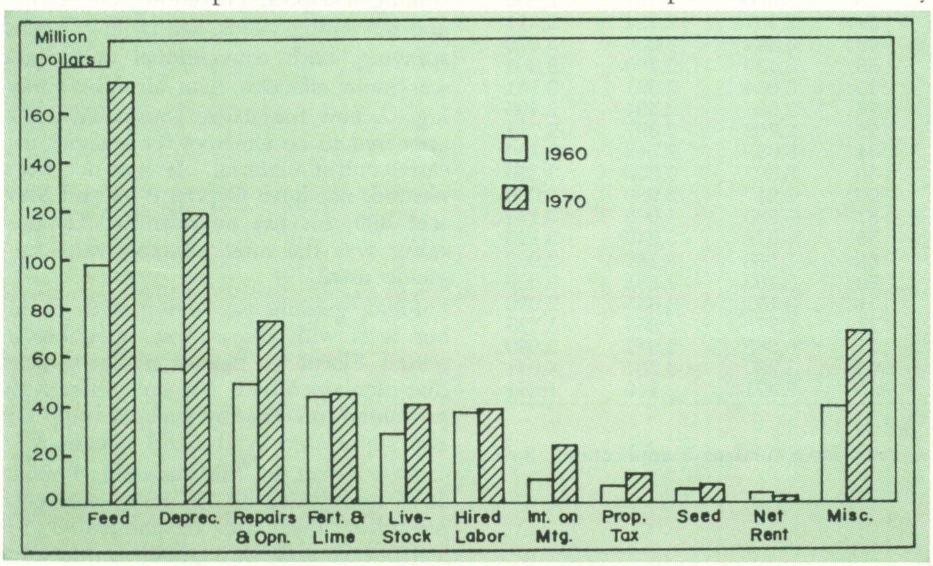
More farm income can mean larger investments and better living.

Overall Picture

In total, farm production expenses in 1970 came to $608.4 million, a record amount. Since 1955, total farm production expenses have doubled. While production expenses increased, what happened to cash farm receipts or the value of a major part of the output of Alabama agriculture?

Cash farm receipts from all commodities excluding government payments were $741.6 million in 1970. Thus, production expenses were 82% of cash farm receipts. In 1960, cash farm receipts were $529.0 million while production expenses were $379.1 million or 72% of receipts. Each year since 1950 farm production expenses have increased relative to cash farm receipts.

Although producers of farm products have been squeezed by the narrowing margin between cash receipts and production expenses, growth of the agribusiness input sector has meant income, employment, and a greater amount of business activity for many persons other than farmers. Generally, the agricultural input market has located closer to producers. It has decentralized and integrated. It has used aggressive merchandising practices to sell service-product packages. Thus, agriculture is much bigger and more important in Alabama's economy than the figure representing value of cash farm receipts.



Farm production expenditures, Alabama 1960 and 1970.

PEANUT LEAFSPOTS– *Ecology and Control*

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THREE LEAFSPOT DISEASES, caused by fungi, are prevalent on peanuts in Alabama. Two of these, early and late Cercospora leafspot incited by *Cercospora arachidicola* and *C. personata*, respectively, are major disease problems. The third, a pepper spot/leaf scorch disease caused by *Leptosphaerulina crassiasca*, is a minor malady of the peanut. Symptoms of this disease are often obscured or confused with the Cercospora leafspots.

For several years, investigations have been conducted at the Wiregrass Substation, Headland, and the Main Station, Auburn, on the ecology and control of these peanut leafspot fungi. These studies have pinpointed the relationship of certain aerobiological factors to development and severity of leafspot diseases, see photo. Data reflected relationships between spore levels, incidence of infection to rainfall, relative humidity, and time. Spore level was correlated, in descending order of importance, with (1) rainfall, (2) maximum temperatures, and (3) minimum relative humidity, while incidence of infection was correlated with (1) minimum relative humidity and (2) minimum temperature. Further, it was demonstrated with spore-trapping devices that *C arachidicola* occurred more frequently at Headland, while *C. personata* prevailed at Auburn. Spores of *L. crassiasca* were trapped in equal frequencies at both locations.

In 1971 field tests at Headland, Benlate 50W and Bravo W-75 were the most effective fungicides evaluated for controlling leafspots, preventing defoliation, and increasing yields, see table. Ground spraying, both conventional and Span, was more effective than airplane spraying. A new fungicide, Topsin TD-1171, appeared to be effective for leafspot disease control material. **It has not been cleared, nor have Cyprex P-80 and Mertect 360, for use on peanuts.** Copper-sulfur was the most effective dust fungicide used.

Field, greenhouse, and growth chamber tests with disease-free, greenhouse-potted Florunner peanut plants showed that Benlate 50WP not only effectively prevented infection by leafspot fungi but also suppressed established infections.

As a result of this research, Benlate 50W and Bravo W-75 spray and copper-sulfur dust are recommended for leafspot control throughout the peanut belt.

AVERAGE INFECTION, DEFOLIATION, AND YIELD OF FLORUNNER PEANUTS IN A 1971 CERCOSPORA LEAFSPOT CONTROL TEST, WIREGRASS SUBSTATION, HEADLAND

Treatment	Infection	Defoliation	Harvest[1]		
			1st	2nd	3rd
Rate/acre[2]	*Pct.*	*Pct.*	*Lb./A.*	*Lb./A.*	*Lb./A.*
Benlate 50 WP, 6 oz.[3]	35	25	3,706	3,433	3,796
Benlate 50 WP, 6 oz.[4]	42	50	3,376	3,190	3,430
Benlate 50 WP, 6 oz.[5]	64	50	3,151	3,139	3,032
Benlate 50 WP + oil, 6 oz. + 1 gal.	60	40	3,311	3,096	3,359
Bravo 6F, 1½ pt.[3]	71	49	3,361	3,411	3,592
Bravo 6F, 1½ pt.[4]	56	45	3,090	3,221	3,591
Bravo 6F, 1½ pt.[3]	59	43	3,427	3,223	3,646
Bravo W-75, 1½ lb.[3]	76	56	3,456	3,182	3,421
Bravo W-75, 1½ lb.[4]	64	48	3,253	3,372	3,647
Bravo W-75, 1½ lb.[5]	67	49	3,527	2,912	3,902
Bravo 5% dust, 12-25 lb.[6]	92	73	2,655	2,268	2,528
Citcop 4E, ½ gal.[3]	91	69	2,983	2,559	2,895
Citcop 4E, ½ gal.[4]	86	63	3,007	2,939	3,261
Citcop 4E, ½ gal.[5]	86	65	2,660	2,797	2,650
Copper-Count N, ½ gal.[3]	83	54	2,937	2,724	3,111
Copper-Sulfur dust, 12-25 lb.[6]	90	59	3,344	3,236	3,370
Cyprex P-80, 14 oz.[3]	79	56	3,139	2,760	2,963
Cyprex P-80, 19.2 oz.[3]	67	45	3,034	2,691	3,131
Dithane M-45, 1½ lb.[3]	91	76	2,937	2,554	2,495
Dithane M-45, 1½ lb.[4]	91	65	2,762	2,697	2,724
Du-Ter, 6 oz.[3]	89	64	3,058	2,748	3,133
Du-Ter, 6 oz.[4]	61	50	3,325	3,250	3,359
Du-Ter, 6 oz.[5]	82	50	3,217	2,980	3,093
Kocide 101, 1½ lb.[3]	84	57	3,285	3,008	3,174
Kocide 101, 1½ lb.[4]	76	56	3,378	3,249	3,129
Kocide 101, 1½ lb.[5]	87	59	3,566	3,187	2,902
Mertect 360 WP, 8 oz.[3]	86	72	3,103	2,885	3,026
Polyram 80 WP, 1½ lb.[3]	88	71	3,151	2,855	2,980
Polyram 80 WP, 1½ lb.[4]	92	72	2,770	2,653	2,783
Polyram 5% dust, 12-25 lb.[6]	77	57	3,065	2,917	2,960
Topsin TD-1171, ¾ lb.[3]	40	23	3,980	3,764	4,041
Untreated check	97	80	2,471	2,110	1,851

[1] Days from planting: 1st = 130, 2nd = 137, 3rd = 144.

[2] All fungicidal materials applied at 14-day intervals for a total of 5 applications; Sevin was applied as needed for insect control.

[3] Conventional ground sprayer at 25 g.p.a.

[4] Span ground sprayer at 4 g.p.a.

[5] Plane (conventional boom) sprayer at 3 g.p.a.

[6] Ground duster.

Seedling Damage from Ammonium Phosphate

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REDUCED GERMINATION and seedling injury caused by ammonium phosphate in mixed fertilizer represent a serious problem that continues to get Auburn research attention.

What makes the problem so serious is the widespread use of ammonium phosphates in mixed fertilizers. These materials are excellent sources of both nitrogen and phosphorus, and are the most common source of phosphorus used. Since they are high analysis materials, they have a relatively low fixed cost per pound of plant nutrient. In addition, they are physically desirable as fertilizer ingredients because they remain dry and granular and flow freely.

Use on Increase

Use of ammonium phosphates in fertilizers has expanded tremendously – a seven-fold increase in the last 10 years. Phosphorus from ammonium phosphate currently exceeds that derived from normal and concentrated superphosphate.

Calcium phosphates derived from rock phosphate, such as super- and concentrated superphosphate, have historically been primary sources of phosphate in fertilizers. Their reaction in the soil is different from the ammonium phosphates, and this difference is the source of the problem being studied by Auburn University Agricultural Experiment Station.

Ammonium phosphates can cause harmful side effects to crops if used improperly (see photo). Auburn research has established three fundamental causes of ammonium phosphate damage to seedlings.

Improper placement of ammonium phosphate caused this stand loss.

Magnesium Deficiency in Seed

Seed magnesium is an important factor in seed germination, and a deficiency can cause poor crop stands. In earlier Auburn studies, Hood and Ensminger found that soaking ammonium phosphate-treated wheat and cottonseed in magnesium solutions enhanced germination. Thus, they established that deficiency of seed magnesium was a factor in ammonium phosphate damage to germination.

Calcium Deficiency to Roots

Calcium is unique in its effect on root growth. Calcium must be present at the growing points of a root for its survival and growth. Therefore, anything that removes too much calcium from the soil solution in which a root grows will retard root and plant growth. Ammonium phosphate readily precipitates calcium from soil solution.

Soil and nutrient solution experiments have established that ammonium phosphate can reduce soil solution calcium to below the critical level required for adequate root growth, Table 1. If roots do not grow extensively into a large volume of soil, they cannot supply the nutrients and moisture required for plant growth. In the coarse-textured soils of Alabama, drought effects are often severe when plants suffer from an inadequate root system.

Ammonia Toxicity to Roots

The desirability of ammonium phosphates as fertilizer materials is enhanced by the presence of water soluble nitrogen and phosphorus. However, the short-term reaction of ammonium phosphate with water in the soil can release ammonia that is volatile and highly toxic to plant roots. Therefore, ammonia toxicity to roots can occur after ammonium phosphate fertilization.

Auburn research has identified the concentrations of ammonia that are toxic to seedling roots of cotton. The toxicity of ammonia is usually confined to seedlings because it is converted to non-toxic forms by soil microorganisms within a few weeks.

Calcium deficiency in the rooting zone appears to be the most important of the three causes of damage from ammonium phosphates in the acid, sandy soils of Alabama. Seedling damage by fertilizers containing ammonium phosphate can be avoided by proper fertilizer placement and a good liming program. Placement of fertilizer with or directly below the seed should be avoided. Broadcast applications of fertilizer and liming according to soil test recommendations will reduce or eliminate incidence of damage.

TABLE 1. EFFECT OF DIAMMONIUM PHOSPHATE ON LENGTH OF 3-DAY-OLD COTTON ROOTS IN SOIL LOW IN CALCIUM

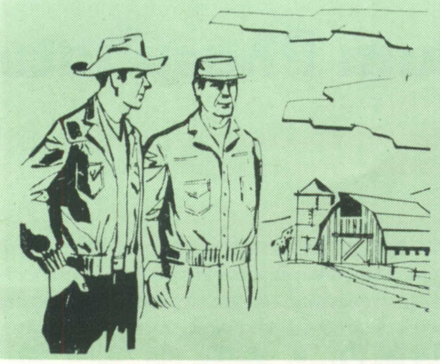
Phosphorus added/acre[1]	Average length of roots	Soil solution calcium[2]
Lb.	*In.*	*Pct.*
0	6.3	20
200	5.0	11
400	4.3	9
800	0.8	2

[1] Phosphorus rates simulate conditions near the fertilizer band.

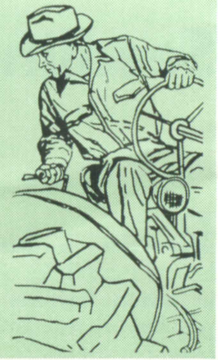
[2] Soil solution ammonia too low to be toxic; per cent calcium is based on the activity ratio of $\frac{Ca}{\text{total cations}}$.

TABLE 2. EFFECT OF DIAMMONIUM PHOSPHATE ON LENGTH OF 3-DAY-OLD COTTON ROOTS IN SOIL HIGH IN CALCIUM

Phosphorus added/acre	Average length of roots	Ammonia in soil solution
Lb.	*In.*	*p.p.m.*
0	6.5	trace
200	5.2	1.0
400	4.6	2.2
800	4.0	4.8



FARM LABOR– Hard to Find and Keep



DAN DAVIS and LOWELL WILSON
Dept. of Agricultural Economics and Rural Sociology

NEARLY EVERY FARMER in Alabama knows that farm labor is hard to find, especially workers who are capable of handling modern farm jobs. The situation is not unique to Alabama, of course. Recruiting, training, and keeping farm workers is a problem nationwide.

A recent study of full-time hired labor in Alabama described trends in the use of hired workers and factors affecting the supply of full-time farm labor. In addition, the findings pointed to management practices that help retain hired workers.

The 10-county Black Belt Area of central Alabama was chosen for the analysis. Montgomery, Lowndes, Dallas, Marengo, and Sumter were the counties selected for studying use of hired labor on cotton, soybean, and beef farms. These operations and dairying represent major farm enterprises of the Black Belt, and dairy labor was being covered in another phase of the study.

Sixty of the area's larger farms, 12 in each county, were selected for study. A questionnaire concerning farm characteristics, family labor, and full-time hired labor was completed by personal visit to each sample farm.

Size of sample farms averaged 2,700 acres, with no great difference in size by enterprise, Table 1. However, soybean and cotton producers reported renting a greater percentage of land than did beef producers. This may be a result of the large production adjustments recently made by cotton and soybean producers. Also, the average age of soybean producers was just 41 years, 10 years younger than the beef producer average.

Beef producers had considerably higher capital stock than cotton and soybean growers, partly because of their large investment in livestock and buildings.

Although size of enterprises increased in the past decade, there was a decline in number of full-time hired laborers used on these farms. Substitution of equipment for labor made the adjustment possible. However, about 75% of total workers employed (including the operator) on these large commercial farms was full-time hired labor. Farmers interviewed hired an average of 3.6 full-time workers.

A total of 209 full-time hired workers was employed on the 60 farms surveyed, Table 2. Average age of workers was about 41 years. The average worker had 7 years of formal education and had been on his present job for 9 years. Cash wages for cotton and soybean workers averaged \$1.26 per hour – higher than pay rate on beef farms. The skill needed to operate expensive field equipment is a possible explanation for this difference in wages. Beef farm workers received 16% of total wages in perquisites, as compared with 13 and 14%, respectively, for cotton and soybean farm workers. Perquisites furnished included utilities, housing, food items, and various incentive and bonus plans. Most perquisites were furnished on a monthly basis, except bonus pay was usually received once a year.

Most employees were paid on an hourly or weekly basis, Table 3. Of the 73 paid by the hour, 56 worked on farms under the Fair Labor Standards Amendment of 1966 as applied to agriculture. They received \$1.39 per hour, whereas hourly wages on farms not covered by this law averaged \$1.12. Most employees paid by the month were the most skilled and, consequently, received higher wages.

Farmers who are retaining high quality farm labor are paying cash wages and perquisitives competitive with nonagricultural employment. But they also consider sound employee-employer relationships as essential for keeping workers. However, farmers who have had workers over longer periods are not necessarily obtaining the quality of labor desired. Some workers may be marginal and cannot find employment elsewhere.

TABLE 1. SELECTED CHARACTERISTICS OF 60 BLACK BELT FARMS STUDIED, BY TYPE OF FARM, 1971

Characteristic	Reporting, by type farm		
	Soybeans	Cotton	Beef
Av. farm size, acres	2,996	2,440	2,758
Proportion renting, pct.	59.6	47.9	25.6
Av. capital stock (excluding land), thou. dol.	169	123	222
Av. age of operator, years	41.7	44.4	51.7
Full-time hired workers/farm, av. no.	3.7	3.7	3.1
Full-time workers employed 5 years ago, av. no.	4.9	4.2	4.2
Full-time workers employed 10 years ago, av. no.	5.7	6.3	5.3

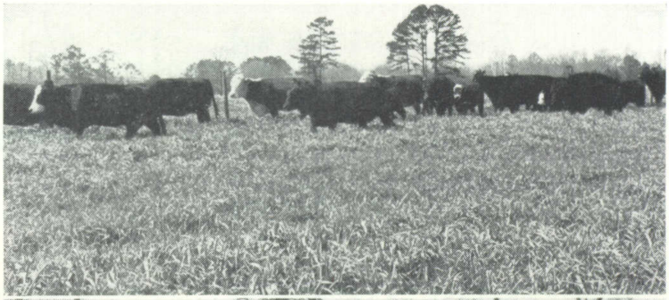
TABLE 2. CHARACTERISTICS OF 209 FULL-TIME HIRED WORKERS, BY TYPE OF FARM IN SELECTED BLACK BELT COUNTIES, 1971

Characteristic	Reporting, by type farm		
	Soybeans	Cotton	Beef
Workers in sample, no.	73	74	62
Average age, years	40.6	39.9	42.0
Average education, years	7.6	6.7	6.6
Average tenure, years	9.2	7.9	10.4
Average hourly cash wage, dol.	1.26	1.26	1.14
Perquisites hourly, dol.	.21	.19	.22

TABLE 3. BASIS OF CASH WAGE RATE, 209 FULL-TIME HIRED WORKERS IN SELECTED BLACK BELT COUNTIES, 1971

Basis of payment	Number of workers	Average wage	Range in wages
	No.	*Dol.*	*Dol.*
Hourly	73	1.33	0.75- 3.00
Daily	42	8.93	6.00- 20.00
Weekly	82	64.88	10.00- 200.00
Monthly	12	361.17	130.00-1000.00

Cattle wintering on Coastal bermudagrass (bottom) and those on winter grazing (top) are shown in these Substation scenes.



Crops or Cattle, or Both, for Productive Land

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V. L. BROWN, Lower Coastal Plain Substation
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THE PROBLEM of best use of land resources continually confronts the farmer. His cash crop choices are limited by acreage control programs and market conditions, as well as by soils and climate. The cost-price squeeze is expected to continue as land and other production costs go higher.

How can a farmer improve his chances of success under such conditions? Soybeans, forages, and cattle are not under production controls and may offer alternatives.

Should the beef cow-calf producer add a soybean enterprise? Can he intensify his practices enough to enable him to compete with the cash crop farmer? Can he blend cash crop and cattle production to his advantage?

Answers to such questions are being sought in a beef production systems experiment that was started about 2 years ago at the Lower Coastal Plain Substation comparing four levels of intensification.

System A utilizes 48 acres of highly productive Class I soil. Two 20-acre fields are used rotationally for growing corn for silage (followed by small grain and clover for winter grazing) and soybeans as a cash crop. (Soybeans also double-cropped with small grain pasture.)

A 5-acre area was set aside for creep grazing for calves. Three acres are used for a feedlot where the 30 cows are confined and fed corn silage and cottonseed meal while row crops are grown on the fields. A 200-ton upright silo with automatic unloader and feeder are used. If the entire corn acreage is not needed to refill the silo, part is harvested for grain. Surplus small grain growth is harvested for hay. Calves are creep fed concentrate when grazing is not available.

TABLE 1. CROP PRODUCTION AND STORED FEED REQUIREMENT FOR THREE SYSTEMS, 2-YEAR AVERAGE

Feed productivity and requirement	System A 30 cows 48 acres[1]	System B 30 cows 45 acres	System C and D[3] 60 cows 60 acres
Grazing period, days	215	204	169
Production of feed			
Hay, tons	12.3	53.0	60.5
Silage, tons	129[2]	----	----
Corn (grain), bu.	569	----	----
Soybeans, bu.	728	----	----
Feed requirement			
Hay, tons	7.2	31.3	110.1
Silage, tons	164	----	----
Cottonseed meal, tons	2.1	2.2	----
Creep con., tons	8.7	----	----
Pro-lix, tons			4.3

[1] 45 productive acres and 3 acres in feedlot.
[2] Silo was filled before experiment began. Production given is average amount required to refill silo each year.
[3] Cattle handled as single unit during grazing season, but separated into two groups during winter.

TABLE 2. CALF PERFORMANCE ON THE SYSTEMS, 1970 AND 1971

System	No. of calves		Av. 205-day weight, adj.		Average weaning age		Av. sale weight	
	1970	1971	1970	1971	1970	1971	1970	1971
	No.	*No.*	*Lb.*	*Lb.*	*Days*	*Days*	*Lb.*	*Lb.*
A	27	26	485	510	271	266	538	576
B	30	27	450	449	258	270	459	497
C	25	28	374	372	253	264	373	391
D	28	27	357	349	248	259	355	372

System B has 45 acres of Class I and II soils for the 30-cow unit – 30 acres of sandy loam in Coastal bermudagrass and 15 acres of lower lying land in tall fescue and ladino. Annual clovers are overseeded on 15 acres of the Coastal. Surplus growth is harvested for hay. Cattle are wintered on fescue and Coastal hay plus cottonseed meal.

System C and D uses 60 acres of sandy loam in Coastal bermuda for 60 cows. The area is cross-fenced to facilitate hay harvest. Cattle are wintered as two 30-cow units and all are fed Coastal hay. One of the 30-cow units is self-fed a liquid protein-mineral-vitamin supplement with the hay.

Preliminary results from the first 2 years, given in the tables, indicate comparative values.

Systems A and B produced a surplus of feed and forage, and A also had a cash crop; C and D were deficit feed systems. Results from System A reflect high productivity of the land and suggest that blending of the row crop and cattle enterprise is practical.

Calf gain and condition reflect forage production. The A and B systems maintained good levels of nutrition for considerably longer periods than C and D, resulting in production of heavier calves, Table 2.

Condition of cows also reflects productivity of the systems. Dams on System A are generally fat and those in B stay in good condition. C and D cows are marginal in flesh at critical periods during the year.

Changing Aspirations of Rural Youth

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EACH YEAR Alabama youth leave high school, vocational school, or junior or senior college to enter the adult labor force. For most, the preparation for adulthood has involved considerable time, financial commitment, and personal effort. During these years of educational preparation, they have been guided by aspirations for specific educational and occupational goals. Are these goals attainable in light of the realities of existing opportunities and current job trends? Or, are many young people destined for disillusionment because of realities of the labor market?

A panel of rural youth attending a sample of 17 randomly selected high schools in four northeastern Alabama counties completed special questionnaires in 1966 as 10th graders and again in 1968 as seniors. Information related to the educational and occupational aspirations of these in-school youth from rural areas and small towns was obtained. Students were asked how much schooling they would like to have and what kind of job they would most want in adult life.

Educational Aspirations

High school youth in northeastern Alabama were strongly oriented toward a college education, see table. Of the 678 boys and girls completing questionnaires as sophomores, 58.7% wanted to attend a junior college or 4-year college after completing high school. Only 10% of the students desired to complete their education prior to or with the completion of high school. When interviewed 2 years later as seniors, the same youth were even more college oriented. Sixty-two per cent now wanted some form of college education. Few had lowered their goals to either high school graduation or post-high school vocational training, and a 5% increase was found among youth desiring graduate school training.

EDUCATIONAL AND OCCUPATIONAL ASPIRATION CHANGE AMONG A PANEL OF NORTHEASTERN ALABAMA HIGH SCHOOL STUDENTS, 1966-68

Aspiration goal levels	Years		Change[1]	
	1966	1968	Aggregate	Category
	Pct.	*Pct.*	*Pct.*	*Pct*
Educational				
H. sch. or less	10.5	11.5	+1.0	70.4
Bus. or voc.	30.8	26.8	−4.0	56.5
Jr. coll.	8.6	8.8	+0.2	77.6
Coll. (4-yr.)	31.8	29.6	−2.2	54.2
Grad. sch.	18.3	23.3	+5.0	47.6
Occupational				
Semi-skilled	8.6	6.8	−1.8	67.3
Skilled	14.6	13.6	−1.0	59.1
Farm	4.6	2.0	−2.6	67.9
Non-profess.[2]	25.6	31.8	+6.2	40.3
Professional	46.6	45.8	−0.8	32.7

[1] Change in aspirations is viewed in terms of the percentage of all youth desiring each goal level (aggregate) versus the percentage of youth who desired each goal level in 1966 but had changed to some other goal level by 1968 (category).

[2] Non-professional occupations include white collar jobs such as sales clerks, typists, managers, proprietors, etc.

Change in educational goals among these young people may appear inconsequential in the aggregate, but consideration of goal changes for each educational category revealed that between their sophomore and senior years 57.4% had changed the amount of education desired. Youth who aspired to either high school or junior college experienced the greatest change in goals, while those aspiring to do graduate study changed least. Some youth had lowered their educational goals, but most had raised their already high goals to even higher levels.

Occupational Aspirations

Rural teenagers have only limited contact with and experience in the work world. Even their contact with industrial and semi-professional jobs is restricted. However, as opportunities for part- and full-time employment become available, this situation changes and more realistic appraisals of employment opportunities mark their career goals during this developmental stage.

Data for youth in northeastern Alabama revealed that the majority aspired to professional and white collar non-professional jobs, see table. In both 10th and 12th grades almost 50% of the youth desired professional occupations. Less than 5% of the 10th graders wanted to farm and only 23% desired skilled or semi-skilled (blue collar) jobs. By the 12th grade a slight shift had occurred from all job levels toward white collar, non-professional occupations such as sales, clerical, and managerial positions.

Again, as was observed regarding education, a considerable proportion of these youth had changed their occupational goals from one general occupational level to another. For example, a change from school teacher to car salesman involved a change from the professional to non-professional level, whereas a change from doctor to lawyer did not. Forty-three per cent of the young people interviewed changed their occupational aspiration during the high school years. The proportion of youth changing their goals was greatest in the semi-skilled and farm occupations and least among youth desiring to enter professions and white collar non-professional jobs.

Comprehensive Counseling Needed

The high percentage of students experiencing change in their educational and occupational goals during the high school years emphasizes the need for effective programs of high school counseling. Problems currently encountered in placing highly trained college graduates into suitable employment suggests a great need among young people for information relating to the opportunities available in the job market. It is important that counselors give emphasis to providing students with educational and occupational alternatives to college attendance and professional careers. The wise counselor will help students consider potentials for and limitations against the attainment of specific goals as well as promote the positive aspects of the many socially essential and well compensated skilled and service jobs for which there currently exists a shortage of qualified young applicants.

CONTROL of MAJOR PEACH DISEASES in ALABAMA

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CONTROL OF BROWN ROT, scab, and bacterial spot is essential to peach production in Alabama. Prevention of the first two of these diseases may be achieved through spray application of effective fungicides.

Evaluation of fungicides to control peach diseases was conducted on peach cultivars Red Cap (1968), Red Globe (1969, 1970), and Elberta (1971). An insufficient number of Red Cap trees after 1968 necessitated a change to Red Globe in 1969; subsequently, winter damage to Red Globe forced the change to Elberta in 1971. Thus, a 4-year comparison on the same cultivar was not possible.

Fungicide treatments were applied with an air-blast sprayer to 4-tree plots replicated four or five times in a randomized block design at the Chilton Area Horticulture Substation. A dormant lime-sulfur (5 gal./100 gal. water) application was made at bud swell for control of peach leaf curl. Lime-sulfur (1 gal./100 gal. water) was applied at 3-day intervals during bloom for control of the blossom blight stage of brown rot. At petal fall, the following fungicides were applied as cover sprays either singly or in combinations: Benlate 50 W, Botran 75 W, Bravo 75 W and 4F, Captan 50 W, Cyprex 65 W, EL-273 25 W, Sclex 80 W, sulfur 90 W, and Topsin-M 70 W. Captan and sulfur were standards for comparison with experimental fungicides. Treatments were applied at 10-14 day intervals, but during rainy weather additional applications were made at 4-6 day intervals. Parathion was added to each fungicide application to control plum curculio and other insects.

Fruit disease counts were made from one box of peaches (200-250 fruit) harvested randomly per replicate. Subsequently, 50 visually unblemished peaches from each replication were selected and stored at 80° ± 5° F; after 5-7 days storage, diseased peaches were counted to evaluate protective qualities of the fungicides in preventing fungus decay in storage.

Control of scab by the newly registered fungicide Benlate was excellent on all varieties throughout the 4 years. Captan and sulfur gave good control of scab except in 1971. Difolatan (1968), Thynon (1968), and Topsin-M (1971) gave excellent control of scab. Bravo, EL-273, and Sclex were very poor for control of scab.

The captan-Cyprex combination appeared effective for bacterial spot control in 1969; however, when Botran was combined with these fungicides in 1971, disease control was reduced. Since Thynon appeared promising in 1968, it was combined with preharvest applications of Benlate or captain plus Botran in 1969. However control was not appreciably different from checks. Bacterial spot incidence following application of Benlate, Bravo, captan, Sclex, and Topsin-M also was not much different from check plots. Bacterial spot incidence in 1968 and 1971 following application of sulfur was nearly double check plots.

Post harvest incidence of brown and rhizopus rots after 5-7 days in storage was least on peaches from Benlate treated plots; this compared favorably with captan, and both Benlate and captan were better than sulfur. With the exception of 1969 tests, rot incidence on peaches from sulfur treated plots was only slightly less than that on peaches from untreated control plots. Bravo, EL-273, Sclex, and Topsin-M showed some promise as controls for brown rot in 1971. Difolatan and Thynon were not effective in preventing post harvest rots.

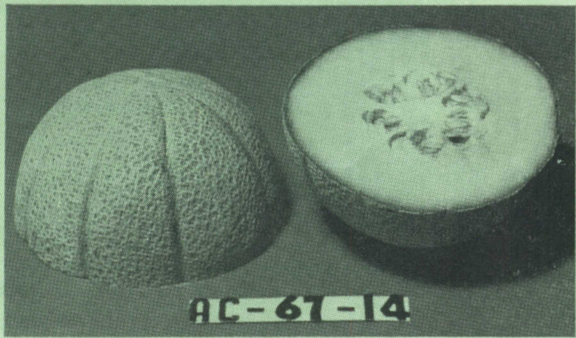
Any peach grower hates to see brown rot such as this in his peach orchard.

Overall control of fungal diseases, scab, brown rot, and rhizopus rot was best with Benlate and captan. **Bravo, EL-273, Sclex, Thynon, and Topsin-M are experimental chemicals that are not registered for peach disease control.**

INCIDENCE OF PEACH DISEASES FROM TREES SPRAYED WITH FUNGICIDES, CHILTON AREA HORTICULTURE SUBSTATION

Treatments, rate/100 gal., and no. of applications[1]	Diseases at harvest								Diseases in storage			
	Scab[2]				Bacterial spot[2]				Brown & rhizopus rots[2]			
	'68	'69	'70	'71	'68	'69	'70	'71	'68	'69	'70	'71
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
Benlate 50W, 3 oz. (9)	0.5	0.4	----	----	15.4	5.5	----	----	14.3	11.5	----	----
Benlate 50W, 6 oz. (9)	----	----	0.2	0.4	----	----	10.8	10.0	----	----	12.4	14.7
Bravo 75W, 1½ lb. (8)	----	----	----	28.6	----	----	----	15.6	----	----	----	15.3
Bravo, 4F, 1 qt. (8)				18.0		----		22.0	----	----	----	16.7
Captan 50W, 2 lb. (9)	2.0	0.5	3.0	----	10.7	2.2	16.0	----	15.6	19.5	15.2	----
Captan 50W, 2 lb. (9)+ Cyprex 65W, ½ lb. (9)	----	0.3	----	----	----	0.9	----	----	----	24.5	----	----
Captan 50W, 2 lb. (5)+ Cyprex 65W, ½ lb.[3] (3)+ Botran 75W, 1 lb. (3)	----	----	----	10.6	----	----	----	11.2	----	----	----	7.7
Difolatan 80W, 1 lb. (8)	0.0	----	----	----	4.4	----	----	----	29.3	----	----	----
EL-273 10W, 40 p.p.m. (9)	----	----	11.6	----	----	----	12.6	----	----	----	30.8	----
EL-273 25W, 80 p.p.m. (8)	----	----	----	49.2	----	----	----	3.2	----	----	----	14.7
Sclex 80W, ½ lb. (8)	----	----	----	62.2	----	----	----	9.7	----	----	----	15.0
Sulfur 90W, 6 lb. (9)	0.1	1.3	0.2	27.3	20.7	4.8	17.0	20.5	43.0	28.0	39.2	34.3
Sulfur 90W, 6 lb. (6)+ Benlate 50W, 6 oz.[3] (3)	----	0.0	1.0	----	----	2.5	11.8	----	----	5.5	19.6	----
Sulfur 90W, 6 lb. (6)+ Captan 50W, 2 lb.[3] (3)	----	0.4	1.6	----	----	3.5	18.6	----	----	17.5	27.2	----
Thynon 75W, 1 lb. (8)	0.0	----	----	----	3.5	----	----	----	44.6	----	----	----
Thynon 75W, 1 lb. (6)+ Benlate 50W, 1 lb.[3] (3)	----	0.1	----	----	----	4.0	----	----	----	23.5	----	----
Thynon 75W, 1 lb. (6)+ Captan 50W, 2 lb.[3] (3)+ Botran 75W, 1 lb.[3] (3)	----	0.6	----	----	----	2.8	----	----	----	31.5	----	----
Topsin-M 70W, ¾ lb. (8)	----	----	----	1.1	----	----	----	11.3	----	----	----	12.0
Check	26.5	20.6	3.2	26.9	11.8	5.2	18.4	13.1	51.3	66.5	44.0	27.0

[1] Numbers in parenthesis are numbers of applications.
[2] Data represent mean of 4-5 replicates of 200 to 250 fruit, and for brown and rhizopus rot represent mean of 4-5 replicates of 50 fruit.
[3] Preharvest applications were made with these fungicides.



GULFCOAST CANTALOUPE

New Variety for Commercial Production

J. D. NORTON, *Department of Horticulture*

MEETING NEEDS of commercial cantaloupe growers was the primary aim of the breeding program that resulted in development of the Gulfcoast variety.

Just released by Auburn University Agricultural Experiment Station, Gulfcoast combines diseases resistance with good quality and size of fruit. It is adapted for growing throughout the Southeast, where mildew and blight are serious disease problems.

Diseases like downy mildew, powdery mildew, and gummy stem blight have seriously limited cantaloupe production in the humid Southeast because most commercial varieties are susceptible. Although there have been varieties resistant to downy mildew and powdery mildew since the late 1930's, these older ones are not dependable enough for today's commercial producers. Thus, the new Gulfcoast variety – the first one with high resistance to gummy stem blight – may fill an important need in the region.

Development of Gulfcoast is a late result of intensified efforts to breed cantaloupes suited for growing in the South. Southland was an earlier Auburn release, and other varieties have been released in Florida, Georgia, and South Carolina, as well as by USDA Agricultural Research Service.

Backcrossing and inbreeding were used to obtain resistance to gummy stem blight, downy mildew, and powdery mildew. The specific cross was AC-63-11 × PI 140471. Backcrossing and disease screening followed, with disease resistant seedlings that produced high quality fruit selected.

Resistance to gummy stem blight came from PI 140471 and resistance to downy mildew and powdery mildew from Georgia 47 and Florisum (through AC-63-11).

Cantaloupes of the Gulfcoast variety are mostly round or round-oval, although many are more rounded than round-oval. They are slightly ribbed and well covered with a medium net. Fruit size varies at different fertility levels and among production areas. The average is close to 2¾ lb. with diameter of 5 to 6 in.

Size for the commercial pack of 24 and 27 size melons is adequate from production with sufficient fertility and under irrigation. Since this is smaller than "Jumbo" melons, they are suited for marketing through wholesale produce buyers or through other outlets for high quality cantaloupes.

Gulfcoast fruits are firm enough for handling in commercial markets. Flesh is firm at full slip, but softens to excellent dessert quality in 3 to 4 days.

DISEASE INDEX RATINGS FOR DOWNY MILDEW, POWDERY MILDEW, AND GUMMY STEM BLIGHT

Variety	Disease index[1]			
	Downy mildew	Powdery mildew	Gummy stem blight	Average
Gulfcoast	1.0	1.0	1.0	1.0
Southland	1.0	1.0	1.5	1.2
Hales Best Jumbo	3.5	3.5	5.0	4.0
Edisto 47	1.5	1.5	3.5	2.2

[1] Index: 0 = no injury, up to 5 = all plants severely damaged.

The new variety was grown as AC-67-14 in trials at Auburn and at other Experiment Station units in Alabama, in the Southern Cooperative Cantaloupe Variety Trials in other Southern States, and in demonstration plantings by commercial growers. Although resistant to prevalent diseases, spraying for disease control is desirable when weather favors disease development.

How Gulfcoast compared with established varieties in yield, disease resistance, and fruit quality is shown by results in the tables.

AVERAGE YIELD, FRUIT WEIGHT, AND SOLUBLE SOLIDS OF CANTALOUPE VARIETIES GROWN IN FIVE ALABAMA LOCATIONS, 1964-70

Variety	Yield per acre	Fruit weight	Soluble solids
	Lb.	*Lb.*	*Pct.*
Gulfcoast	18,437	2.72	12.7
Southland	18,838	3.02	11.8
Hales Best Jumbo	10,288	2.77	6.6
Edisto 47	17,180	3.05	10.2

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