

EFFECTS of TIME of PLANTING and DIGGING on YIELD and GRADE of SWEETPOTATOES in SOUTHERN ALABAMA

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Sweetpotato yields may be doubled or even trebled by planting earlier and digging later. Of all the things a farmer can control and do, time between planting and digging has the greatest effect on yields from fertile soils.

Yields alone, however, are not the only basis for deciding the time of planting and digging. Grades, marketing seasons, intended uses of the crop, and market prices will often determine when the crop should be planted and harvested for maximum returns. Thus, knowledge of expected yields of No. 1's and other grades at given periods from plantings made at different times is important to the grower in deciding his plan of production.

Reported here are important results from experiments in sweetpotato production in southern Alabama by the Alabama Agricultural Experiment Station.

CHOICES OPEN to GROWER

There are three choices open to a sweetpotato grower in southern Alabama. He may grow an early crop from an early planting, a late crop from an early planting, or a late crop from a late planting.

To obtain a satisfactory yield

of potatoes for sale by midsummer, it requires early planting. Only slips are available for this planting. Prices for potatoes may be high in midsummer. Good returns, therefore, may be obtained even with a medium yield. Fairly good yields, however, may be made by August if the crop is planted early enough.

High yields of potatoes may be expected from the crop if planted early and dug late. Such type of production is best adapted to a program that combines marketing the better grades and processing or feeding the lower grades.

The late-planted crop is suited to an operation where production of high-quality potatoes either for market or seed purposes is the principal aim. This crop usually will be planted from vine cuttings. Better shaped roots and less disease will result from late-planted vine cuttings than from early-planted slips.

Growers may specialize in one type of production or more likely most growers will be concerned with all three types of production.

SCOPE of the EXPERIMENT

The experiment reported in this publication was designed to answer some of the questions in regard to yields and grades of potatoes

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produced when planted from slips at different dates and harvested at different dates.

The results represent 3 years' experimental work. Plantings were made at three periods and potatoes dug at six periods. The experiment was conducted at Atmore on a good grade of Red Bay soil. The variety used was Porto Rico. Fertilizer treatment consisted of 800 pounds per acre of 4-10-7 applied at planting time plus 100 pounds per acre of nitrate of soda applied just as the vines began to run. Plants were set 16 inches apart. All treatments were repeated on three different sets of plots in order to obtain more dependable results.

Results of Experiments

Yields of No. 1 potatoes and total yields of potatoes from each combination of the three planting dates and the six digging dates are given in Table 1.

Increases in yields of potatoes from earlier plantings over yields of those planted later are given in Table 2.

Increases in yields of potatoes dug at different dates over the yields of potatoes dug at earlier dates are given in Table 3.

The records in Table 1 permit a comparison of the yields of potatoes obtained from any of the planting dates when dug at any of the digging periods.

High Yields Result from Long Growing Season

The yield of No. 1's and of all grades increased consistently from the earliest planting date to the latest digging date, Table 1. With the exception of one instance, the yield at each digging date was larger than the previous date. It should be pointed out that the larger increases occurred in the early part of the harvest season, Table 3.

For example, at the first dig-

ging (July 29), which was 105 days after planting (April 15), the yield was 70 bushels per acre of No. 1 potatoes. At the next digging date (August 16), the acre yield was 148 bushels. This is an increase of 78 bushels of No. 1's over that harvested July 29. In other words, 18 additional growing days increased the yield over 100 per cent. The yield of No. 1 potatoes dug August 28 was 198 bushels per acre, or 50 bushels more than that harvested 12 days earlier (August 16). With each successive digging date during the remainder of the season, increases in yields of No. 1's became progressively less. For instance, the yield of potatoes dug September 15 was only 32 bushels higher than that dug August 28 -- 18 days earlier. In the last 36 days, the increase of potatoes dug October 21 was only 32 bushels over the yield of those dug September 15.

In all, the increased yield of No. 1 potatoes dug October 21 over that harvested July 29 amounted to 195 bushels per acre. Thus, 84 more growing days gave about 2-3/4 times as many No. 1 potatoes.

Similar increases in No. 1 potatoes were obtained for each longer growing period in both cases of the later planting dates.

The increases in the total yield of potatoes for each longer growing period were even more striking than the increases in the yield of No. 1 potatoes. For instance, the total yield of potatoes planted on April 29 and dug on July 29 was 116 bushels. In 18 more growing days the yield had increased 93 bushels, in 12 more growing days another 63 bushels, in 19 more growing days another 69 bushels, in 18 more growing days another 30 bushels, and in 17 more growing days another 67 bushels.

The largest increase in the yield of potatoes between planting dates and digging dates amounted to 255 bushels per acre of No. 1's

and 403 bushels of all grades.

Early Planting Necessary for Early Crop

Early planting is necessary for a high yield of early potatoes, Table 1. Yield of No. 1 potatoes from the May 16 planting was only 26 bushels per acre by August 16, and from the April 29 planting it was only 54 bushels. On the other hand, yield from the April 15 planting on August 16 was 148 bushels. By August 28 the yields of No. 1 potatoes from these 3 planting dates were 77, 116, and 198 bushels per acre, respectively.

Early Planting Gives Increases in Yields Over Late Planting

It may be noted (Table 2) that the increases in the total yield of potatoes planted April 15 over those planted May 16 for the different harvest dates ranged from 133 to 164 bushels per acre. The average increase was 143 bushels. This means that there was a loss of 36 bushels per acre each week planting was delayed after April 15 and until May 16. The loss per week was about 47 bushels per acre for each week's delay between April 15 and April 29, whereas the loss was only 23 bushels per acre for each week planting was delayed between April 29 and May 16.

The increase in the yield of No. 1 potatoes planted April 15 over those planted April 29 was much higher when dug early in the season than when dug late. The increases in yield of No. 1's were 94 and 82 bushels per acre for those dug August 16 and August 28, respectively, whereas the increases were only 42 and 56 bushels, respectively, for those dug October 4 and October 21. On the other hand increases of No. 1 potatoes from April 29 planting over May 16 planting were about the same for the six digging dates. These differences ranging from 28 to 39 bushels per acre and averaging about 34 bushels at each digging period.

Large increases Obtained from Late Digging Over Early Digging

The increased yields (Table 3) of No. 1 potatoes dug October 21 over those dug August 16 were 117 bushels per acre from the April 15 planting, 155 bushels per acre from the April 29 planting, and 150 bushels from the May 16 planting. The increased yields of all grades of potatoes dug October 21 over those dug August 16 were 229, 216, and 203 for the three successive planting dates.

Potatoes dug October 21 had produced 194 bushels per acre of No. 1's and 322 bushels per acre of all grades more than those dug July 29.

HOW to USE RESULTS

The results in the tables permit a varied number of comparisons. For instance, the information will help the grower choose between (1) selling his crop early in the season when prices may be high but yield is below the maximum, or (2) holding his crop for later harvest and sale when yields are higher and prices may be lower. As an example, the yield of 148 bushels per acre of No. 1's dug August 16 from April 15 planting and sold at 6 to 8 cents per pound would bring \$444 to \$592. The yield of 233 bushels per acre dug September 15 from April 15 planting and sold at 4 to 6 cents would bring \$466 to \$699. The higher price at the earlier digging period might, therefore, partly cancel out the value of the higher yield obtained at the later digging period.

The results should apply to the southern fourth of the State on land capable of producing 300 to 400 bushels per acre when the crop is planted early and dug late.

On land producing lower total yields than these, smaller differences will be obtained between potatoes planted at different dates and dug at different dates.

Table 1.- Yields of No. 1's and All Grades of Sweetpotatoes Set and Dug at Different Dates, 3-Year Average, 1945-47

Average planting date	Yield by different digging dates					
	July 29	August 16	August 28	September 15	October 4	October 21
<i>Bushels per acre, No. 1's</i>						
April 15	70	148	198	233	231	265
April 29	10	54	116	174	189	209
May 16	--	26	77	141	151	176
<i>Bushels per acre, all grades</i>						
April 15	116	209	272	341	371	438
April 29	35	110	176	252	288	326
May 16	--	71	128	202	238	274

Table 2.- Increase in Yields of Potatoes from Earlier Planting, 3-Year Average, 1945-47

Average planting date	Increase in yield from earlier planting dates over later dates at six digging periods						
	July 29	Aug. 16	Aug. 28	Sept. 15	Oct. 4	Oct. 21	
<i>Increase in bushels per acre, No. 1's</i>							
Apr. 15 over Apr. 29		61	94	82	59	42	56
Apr. 29 over May 16		--	28	39	33	38	33
Apr. 15 over May 16		--	122	121	92	80	89
<i>Increase in bushels per acre, all grades</i>							
Apr. 15 over Apr. 29		81	99	96	89	83	112
Apr. 29 over May 16		--	39	38	50	50	52
Apr. 15 over May 16		--	138	144	139	133	164

Table 3.- Increase in Yield of Potatoes Resulting from Delayed Harvest, 3-Year Average, 1945-47

Average planting date	Increase in Yield over earlier digging periods						
	Aug. 16 over July 29	Aug. 28 over Aug. 16	Sept. 15 over Aug. 28	Oct. 4 over Sept. 15	Oct. 21 over Oct. 4	Oct. 21 over Aug. 16	Oct. 21 over July 29
	<i>Increase in bushels per acre, No. 1's</i>						
April 15	78	50	35	-2	34	117	195
April 29	44	62	58	15	20	155	199
May 16	--	51	64	10	25	150	---
<i>Increase in bushels per acre, all grades</i>							
April 15	93	63	69	30	67	229	322
April 29	75	66	76	36	38	216	291
May 16	--	57	74	36	36	203	---