

THE INFLUENCE OF PLANT POPULATION ON
YIELD AND GRADE OF THE ARGENTINE
VARIETY OF SPANISH PEANUTS

By

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CHAPTER I

INTRODUCTION

The production of peanuts is important to farmers in Johnston County. The peanut is a specialized crop and can result in high income per unit planted.

Farmers are very interested in the best methods of production. Since most farmers have their personal opinions as to rates of seeding and row widths, it was felt that a field test to study these variables would be beneficial in advising farmers. Results of a test involving various row widths and planting rates could mean more profit for peanut farmers.

The peanuts in Johnston County are harvested mechanically, and this tends to reduce the cost of production. Planting time, planting rates, and row widths vary to such a degree that additional information is needed if profits are to be further increased.

Until the past two or three years, farmers in Johnston County have planted peanuts in rows spaced 36 to 42 inches apart. This was the same spacing used for other row crops grown in Johnston County. Since acreage allotments for peanuts cannot be adjusted in most cases, farmers are looking for other means of increasing the profits from this crop.

The objective of the present study was to determine the yield and grade for Argentine peanuts planted at two rates within the row and three spacings between rows.

CHAPTER II

REVIEW OF LITERATURE

Aderhold (3) listed the following seed and growth characteristics for two varieties of Spanish peanuts:

<u>Variety</u>	<u>Seed Per Pound</u>	<u>Days to Maturity</u>	<u>Growth Habit</u>	<u>Shelling Per Cent</u>
Argentine	1222	120	Bunch	78.3
Dixie Spanish	1200	120	Bunch	78.5

Seed per pound, shelling per cent, and days to maturity are subject to variation from season to season. The above figures are averages representing several different years and locations.

Spacing studies were reported by Bennett (4) using Spanish varieties with 24- and 30-inch spacings between rows, and with plants spaced 4, 6, 8, 12, and 18 inches apart in the rows. The average yield for the plantings in 24-inch rows was 140 bushels per acre. Peanuts planted in three-foot rows with the same plant spacings in the row produced an average of 109 bushels per acre. Bennett (4) reported that plants spaced 8 to 9 inches apart in the row and 24 inches between rows produced the highest yields; however, due to difficulty in tilling closely spaced crops, he recommended row spacings of 30 inches.

The distance between plants in the row depends upon the type of peanuts planted, according to Conner (5). Spanish-type peanuts produced higher yields from closer spaced plantings than runner and bunch types (5). Peanuts should be planted in rows 30 to 36 inches apart and on the

level rather than on beds, unless soil is poorly drained. Plants 3 to 6 inches apart in the row returned higher yields of Spanish peanuts than did wider spacings.

According to Gore (6), peanuts planted in the hull should be planted at the rate of 60 pounds per acre, while shelled seed should be planted at a minimum rate of 30 to 40 pounds of seed per acre. Rows were spaced from 24 to 30 inches apart. Narrow rows and close spacings of plants in the row have consistently produced the highest yields of Spanish varieties.

Tests conducted in 1919 included rows as narrow as 12 and 18 inches. Yields of both nuts and hay were larger from the narrow than from the wide rows, according to McClelland (8). Narrow rows were discontinued, however, because of the difficulties encountered in cultivation. Twenty-four-inch rows were included in two of the tests. Results showed considerable gain in yield when peanuts were planted in 30-inch as compared to 36-inch rows. Twenty-four-inch rows produced a little higher yield, but the 30-inch rows offered less hindrance to cultivation, and this spacing was adopted. Grade results were not reported in these studies.

The data indicate that spacing plants 2 to 6 inches in the row with 30 inches between rows was the best combination for high yields of Spanish peanuts.

Spanish peanuts can be planted in 24-inch rows, which will require about 50 pounds of shelled seed per acre and will space plants from 3 to 5 inches apart in the row, according to Killinger et al (7). These spacing tests were run in 1928 and 1929. Spanish peanuts were planted in 30-inch rows and spaced 3, 6, and 9 inches apart in the row. The yields were 359 pounds per acre more from the 3-inch and 145 pounds per acre more from the 6-inch spacings as compared to the 9-inch spacings. They also reported

that production was higher in the 24-inch than the 30-inch rows.

A good stand of peanuts is important for maximum yields (1); therefore, high-quality seed is a necessity. Yield increases were higher when Number 1 shelled seed was planted. Seedlings from "shrivels" or "pegs" were smaller and grew off more slowly and were more likely to be attacked by the insect, lesser corn stalk borer. Smaller plants also often die if covered during cultivation. "Pegs" are also inferior to Number 1 seed although the stands may be equal for Spanish varieties in row widths of more than 30 inches. In the tests using poor seed, yields dropped sharply regardless of the close spacings of plants in the rows.

Highest yields of Spanish peanuts were obtained from plantings in 18-inch rows with 6-inch hill spacing by researchers in Georgia (2). Since narrow rows were difficult to cultivate and harvest, they suggested using 24-inch rows with 4 to 6 inches between hills. These results were derived from a series of tests carried out during the seven-year period, 1930-1936.

CHAPTER III

MATERIALS AND METHODS

Procedure for Handling Test

Arasan treated Argentine peanut seed was planted in the test plots May 29, 1961, in rows spaced 20, 30, and 40 inches apart. Each row width was planted at rates of 25 and 50 pounds of seed per acre. A good stand was noted in all plots on June 5, 1961. The plots were tilled for the first time after planting with a row-type rotary hoe on June 10, 1961. Thrips invaded the plots in damaging numbers, and on June 17, DDT was applied in liquid form at the rate of 0.75 pound per acre of actual material. The plots were tilled the second time with a rotary hoe on June 26, 1961.

Single-row equipment of the regular field cultivator type was used for intertilling the plots on July 2 and July 21. On July 27, 16-inch sweeps were run between the rows, and the crop was harvested August 29, 1961. Harvesting to determine yields consisted of hand-pulling the peanuts from 25 feet of row in each plot of three randomly chosen areas of the six treatments.

The peanuts from each of the 18 plots were bundled and transported to the Oklahoma Agricultural Experiment Station for picking. After the peanuts from each plot were air-dried, they were weighed, recorded, and plot yields converted to pounds per acre. A representative sample from each plot was graded by the Federal-State Inspection Service at Durant.

Soil Description of Peanut Test Area

The soil where the peanut cultural experiment was located belongs to the Dougherty Series. The plot was on a high terrace approximately 100 feet above the present flood-plain (probably Ploistocene Age).

The soil is a red-yellow Podzolic with high natural fertility. Dougherty soils were developed under sub-humid climate and scrub forest consisting mainly of post oak, blackjack, oak, hickory, walnut, pecan, and elm, often with an undergrowth of tall grasses.

Soil Profile: Dougherty very fine sandy loam

- A₁ 0-8" Dark brown very fine sandy loam, moist; weak fine granular structure; very friable when moist; loose when dry; slightly acid; gradual boundary.
- A₂ 8-14" Brown fine sandy loam (moist); weak granular to single grain structure; very friable moist, loose, dry; slightly acid; gradual boundary.
- B₂ 14-30" Yellowish red sandy clay loam; prismatic structure breaking to moderate medium granular; friable when moist, hard when dry; slightly acid, gradual boundary.
- B₃ 30-42+" Yellowish red sandy clay loam; (lighter colored and lighter texture than above) moderate medium granular structure; friable when moist, hard when dry; slightly acid.

Crop History on Test Area

Crops were grown on the test plot area before 1900. In 1901 this area was planted to peaches and remained an orchard until approximately 1925.

From 1925 to 1948 it produced general crops such as corn, cotton,

and grain sorghum. In the spring of 1948 it was tilled and planted to corn, but the crop was not harvested. Competition of Johnson Grass resulted in a crop failure. The test area remained in this condition until the spring of 1952.

The test area was summer fallowed during 1952 and planted to alfalfa September 1 of that year. It continued in alfalfa until May of 1960. The field was planted to peanuts June 5, 1960. After the peanut crop was harvested, the test area was drilled to wheat, Elbon rye, and vetch on November 4, 1960. This mixture was grazed from March 4 to March 26, 1961, after which the growth was cut with a brush cutter and turned under. The cover crop was approximately 18 inches in height when cut. The area was plowed 5 inches deep on March 9, 1961, then tandem disked on May 10, 1961, and cultipacked on May 11, 1961.

Fertilizing Test Area

It was determined by visiting with farmers in the community that this field was not fertilized prior to 1952. In August, 1952, one ton of limestone and 200 pounds per acre of 0-20-0 were applied.

In 1952, 20 pounds per acre of boron were applied with a cyclone seeder. In February, 1954, 200 pounds per acre of 0-20-0 were applied. On February 6, 1957, 200 pounds per acre of 0-46-0 were drilled on the alfalfa. On June 6, 1960, 150 pounds per acre of 16-48-0 and 1.5 tons per acre of limestone were applied. On March 28, 1961, 125 pounds per acre of 10-10-10 were applied immediately following the cutting of winter cover crop and prior to plowing.

Precipitation Near Test Area

The annual precipitation report was taken from the weather station located near Tishomingo, one mile east of the test plot area.

The long-time average and the annual precipitation by months for 1960 and 1961, as taken from the United States Meteorology report, are as follows:

INCHES OF RAINFALL BY MONTH 1938-58 AVERAGE, 1960 and 1961

<u>Month</u>	<u>1938-1958</u>	<u>1960</u>	<u>1961</u>
January	2.20	2.63	0.35
February	2.95	3.27	2.20
March	3.08	2.53	5.19
April	4.57	2.09	0.58
May	5.78	4.49	4.77
June	4.11	1.71	3.12
July	2.91	4.92	4.26
August	2.28	4.18	1.76
September	2.70	4.66	4.68
October	3.24	4.11	4.14
November	2.21	0.56	5.74
December	2.50	3.96	2.77
Total	38.53	39.11	39.56

The rainfall distribution during the 1961 growing season was good. The data below show that 18.59 inches fell from May 1 through September 30, 1961. Yields were probably reduced some because of the lack of rainfall during August. Distribution for this month was excellent, but the total was far below the requirements for high yields.

DAILY RAINFALL FOR THE PERIOD OF
MAY 1 THROUGH AUGUST 31, 1961

<u>Month</u>	<u>Date</u>	<u>Amount</u>
May, 1961	4	0.79
	5	0.05
	6	1.17
	7	0.03
	8	0.29
	14	0.03
	20	0.52
	22	0.98
June, 1961	26	0.91
	3	0.35
	5	0.50
	6	0.04
	7	0.08
	8	0.89
	15	0.35
	16	0.05
	17	0.11
July, 1961	24	0.34
	25	0.41
	7	0.08
	8	0.05
	13	0.07
	14	0.04
	15	0.36
	16	0.40
August, 1961	17	0.41
	23	2.85
	4	0.02
	6	0.25
	14	0.41
	15	0.60
	17	0.09
	22	0.08
	30	0.05
	31	0.26

CHAPTER IV

RESULTS AND DISCUSSION

The rainfall in the test plot area between May 1 and September 30, 1961, was good except for the month of August. The total rainfall received during August was 1.76 inches and was scattered with eight showers ranging from 0.02 to 0.60 inch per rain. The inadequate amount of rain during the critical period of fruit development resulted in a mean peanut yield of 1700.5 pounds per acre for the test (Table 1). The mean yield, grade results and acre value of the peanuts for the treatments are shown in Tables 1, 2, 3, and 4 and in APPENDIX TABLES 1 through 6.

The mean peanut yield for the 50-pound seeding rate planted in rows 30 inches apart was significantly higher at the 5-per cent level of significance than the mean yield for the 25-pound seeding rate planted in rows 40 inches apart (Table 1). The mean yields for the other treatments were not significantly different. The coefficient of variation for the test was 13.6 per cent.

The seeding rates of 50 pounds per acre averaged 56.1 pounds per acre more than the 25-pound rates. The mean peanut yields for the 30-, 20-, and 40-inch row spacings were 1826.8, 1767.8, and 1506.8 pounds per acre, respectively (Table 2). The mean yields of the different row spacing plots were not significantly different.

TABLE 1
POUNDS OF CLEAN AIR-DRIED PEANUTS PER ACRE
IN CULTURAL STUDY, JOHNSTON COUNTY, 1961

Treatment		Replication			Mean
Pounds Peanuts Per Acre	Row Width (Inches)	1	11	111	
50	20	1742	1435	1896	1691.0
50	30	1638	2354	1847	1946.3
50	40	1560	1584	1510	<u>1551.3</u>
Mean					1729.5
25	20	1896	1537	2101	1844.6
25	30	1638	1742	1742	1707.3
25	40	1436	1540	1411	<u>1462.3</u>
Mean					1671.4
Grand Mean					1700.5
Least Significant Difference at 5% Level					420.0
Coefficient of Variation (%)					13.6

TABLE 2

MEAN PEANUT YIELDS, PERCENTAGES SOUND MATURE
Kernels, VALUE PER TON, AND VALUE PER
ACRE FOR THREE-ROW SPACINGS, 1961

Row Spacing	Mean Peanut Yield	Mean Sound Mature Kernels	Mean Other Kernels	Mean Value Per	
				Ton	Acre
Inches	Lbs./A	Per Cent	Per Cent	Dollars	Dollars
20	1767.8	70.3	2.7	235.85	206.59
30	1826.8	70.4	3.2	235.18	213.58
40	1506.8	71.5	2.5	237.50	177.80

TABLE 3
MEAN PERCENTAGES OF SOUND MATURE KERNELS, SOUND SPLITS,
OTHER KERNELS, TOTAL KERNELS, AND PER CENT FOR
VARIOUS CULTURAL TREATMENTS, 1961 ^{1/}

Treatment		Mean	Mean	Mean	Mean
Peanuts	Row	Sound	Sound	Other	Total
Per Acre	Width	Mature	Splits	Kernels	Kernels
		Kernels ^{2/}	Splits ^{2/}	Kernels ^{2/}	Kernels ^{2/}
Pounds	Inches	Per Cent	Per Cent	Per Cent	Per Cent
50	20	69.3	4.0	2.7	76.3
50	30	69.7	2.3	4.0	76.3
50	40	72.7	2.7	2.0	77.3
Mean		70.6	3.0	2.9	76.6
25	20	71.3	2.7	2.7	76.3
25	30	71.0	3.3	2.3	77.0
25	40	70.3	3.3	3.0	76.7
Mean		70.9	3.1	2.7	76.7

^{1/} Percentage of damage averaged less than one per cent for each treatment; hence, the data was not included. Moisture content of the kernels was 7 per cent for each sample.

^{2/} Each figure represents the mean of three replications.

TABLE 4
THE MEAN VALUE PER TON AND VALUE PER ACRE
OF PEANUTS FOR ROW WIDTH AND
SEEDING RATE TREATMENTS

<u>Treatment</u>		<u>Mean Value Per</u>	
<u>Peanuts</u> <u>Per Acre</u>	<u>Row</u> <u>Width</u>	<u>Ton</u>	<u>Acre</u>
<u>Pounds</u>	<u>Inches</u>	<u>Dollars</u>	<u>Dollars</u>
50	20	235.91	197.84
50	30	232.50	225.73
50	40	239.58	184.56
Mean		235.99	202.29
25	20	235.80	215.34
25	30	237.87	201.42
25	40	235.51	171.05
Mean		236.39	195.93

The mean percentages of sound mature kernels for the seeding rates of 50 and 25 pounds per acre were 70.6 and 70.9, respectively. The mean percentages of sound mature kernels for the 20-, 30-, and 40-inch row spacings were 70.3, 70.4, and 71.5, respectively (Tables 2 and 3). The percentage of sound mature kernels was slightly lower as the plant population per acre was increased.

The mean acre value of the peanuts was \$54.69 more for the seeding rate of 50 pounds per acre with 30-inch row spacing than the 25-pound rate planted in 40-inch rows (Table 4). The mean acre values were \$213.88 and \$202.29, respectively, for the 25- and 50-pound seeding rates (Table 4). The mean acre values for the 30-, 20-, and 40-inch row spacings were \$213.58, \$206.59, and \$177.80, respectively (Tables 2 and 4). It was interesting to note that the treatment with highest mean value per acre had the lowest value per ton (Table 4).

Cultivating and harvesting the plots in 20-inch rows with single-row equipment were difficult. It was also more costly to culture the plots with 20-inch spacing between rows because of the additional hoeing necessitated by the inability to cultivate properly. The high plant population in the narrow rows evidenced more moisture stress during the latter part of the growing season and during the harvest period.

The most money was received from the 30-inch row spacings and the 50-pound seeding rate, and the least amount of money was received from the 40-inch row and 25-pound seeding rate plot.

A one-row Super International Tractor was used in cultivating the test plots. The operator felt that it was very inconvenient to plant and till rows spaced 20 inches apart. The harvest operation was also a problem. Tilling the 20-inch rows would have been easier with a larger tractor, by

using several 20-inch rows as a unit with wide spacing between units. It was also necessary to give the 20-inch row area one additional hand hoeing due to the inability to properly cultivate this plot each time. It was also noted that the 20-inch row plots became extremely dry during the latter part of the season and were particularly dry during the harvest period. No serious intertillage problems were encountered in the 30- and 40-inch row plots.

Based on the experience of handling the plots with one-row equipment, it is suggested that the row spacings for peanuts be not less than 30 inches. The data indicate that at least 50 pounds of high-quality shelled seed should be planted per acre.

CHAPTER V

SUMMARY AND CONCLUSIONS

The peanut cultural study of the influence of plant population on yield and grade was conducted on the author's farm, which is located $1\frac{1}{2}$ miles southwest of Tishomingo in the northeast quarter of Section 8-6-4E.

Foundation seed of the Argentine variety was used at the rates of 25 and 50 pounds per acre of medium-sized shelled seed. These rates were planted in rows spaced 20, 30, and 40 inches apart.

The plots seeded at the rate of 50 pounds per acre in 30-inch rows produced the highest yield of 1946.3 pounds of peanuts per acre. The lowest yield was from the 25-pound seeding rate in 40-inch rows, which produced 1462.3 pounds per acre.

Higher plant population per acre produced the highest yields, with the exception of the 50-pound seeding rate in the 30-inch row spacing, which was higher than the 20-inch row spacing. The percentage of sound mature kernels was slightly higher for the 40-inch rows seeded at the rate of 50 pounds per acre. There was little variation in yields from the different row spacings when seeded at the rate of 25 pounds per acre. Row spacing had a greater influence on yield than seeding rates in this test.

Planting, cultivating, and harvesting were somewhat of a problem in the 20-inch row plots.

LITERATURE CITED

1. Anon. Silver Anniversary Report 1944-1945. Georgia Coastal Plan Experiment Station Bulletin 42, July, 1945, 33.
2. Anon. Peanut Row Spacing. Georgia Coastal Plan Experiment Station Annual Report, July, 1950, 30-33.
3. Aderhold, O. C. 1961 Field Crop Variety Trials. University of Georgia, College of Agriculture, January, 1962, 22.
4. Bennett, R. L. Yield of Spanish Peanuts Planted at Different Distances. Arkansas Agricultural Experiment Station Bulletin 58, 101-102.
5. Conner, A. B. Peanuts in Texas. Texas Agricultural Experiment Station Bulletin 22, May, 1928, 11-13.
6. Gore, U. R. Cultural Methods for Growing Peanuts. Georgia Agricultural Experiment Station Circular No. 131, November, 1941, 2-3.
7. Killinger, G. B., W. E. Stokes, F. Clark, and J. D. Warner. Peanuts in Florida. Florida Agricultural Experiment Station Bulletin 432: 9, 26-29.
8. McClelland, C. K. The Peanut Crop in Arkansas. Arkansas Agricultural Experiment Station Bulletin 263, January, 1931, 9-10.

A P P E N D I X

APPENDIX TABLE 1

RESULTS BY REPLICATIONS FOR MEAN GRADE AND VALUE
 PER TON OF SPANISH PEANUTS GROWN ON 20-INCH ROWS
 SEEDED AT THE RATE OF 50 POUNDS PER ACRE

Treatment (50 lbs.)	Row Width (20")	61-34 1	61-40 11	61-46 111	Mean
Sound Mature Kernels		66	72	70	69.3
Damaged Kernels		1	0	0	0.0
Sound Splits		6	3	3	4.0
Total Per Cent Kernels		72	75	73	73.3
Other Kernels		4	1	3	2.7
Total Kernels		77	76	76	76.3
Hulls		23	24	24	
Moisture		7	7	7	
Temperature		74	65	65	
Correction		+24	+60	+60	
Steinlite Reading		D50	D46	D47	
Value Per Ton		\$233.30	\$240.38	\$234.06	\$235.91

APPENDIX TABLE 2

RESULTS BY REPLICATIONS FOR MEAN GRADE AND VALUE
 PER TON OF SPANISH PEANUTS GROWN ON 30-INCH ROWS
 SEEDED AT THE RATE OF 50 POUNDS PER ACRE

Treatment (50 lbs.)	Row Width (30")	61-35 1	61-41 11	61-47 111	Mean
Sound Mature Kernels		70	70	69	69.7
Damaged Kernels		1	0	0	0.0
Sound Splits		2	3	2	2.3
Total Per Cent Kernels		72	73	71	72.0
Other Kernels		4	4	4	4.0
Total Kernels		77	77	75	76.3
Hulls		23	23	25	
Moisture		7	7	7	
Temperature		65	65	65	
Correction		+60	+60	+60	
Steinlite Reading		D46	D47	D46	
Value Per Ton		\$233.30	\$235.26	\$228.95	\$232.50

APPENDIX TABLE 3

RESULTS BY REPLICATIONS FOR MEAN GRADE AND VALUE
PER TON OF SPANISH PEANUTS GROWN ON 40-INCH ROWS
SEEDED AT THE RATE OF 50 POUNDS PER ACRE

Treatment (50 lbs.)	Row Width (40")	61-36 1	61-42 11	61-48 111	Mean
Sound Mature Kernels		73	72	73	72.7
Damaged Kernels		0	1	0	0.0
Sound Splits		3	3	2	2.7
Total Per Cent Kernels		76	74	75	75.0
Other Kernels		2	2	2	2.0
Total Kernels		78	77	77	77.3
Hulls		22	23	23	
Moisture		7	7	7	
Temperature		74	65	65	
Correction		+24	+60	+60	
Steinlite Reading		D51	D46	D46	
Value Per Ton		\$242.33	\$237.22	\$239.18	\$239.58

APPENDIX TABLE 4

RESULTS BY REPLICATIONS FOR MEAN GRADE AND VALUE
PER TON OF SPANISH PEANUTS GROWN ON 20-INCH ROWS
SEEDED AT THE RATE OF 25 POUNDS PER ACRE

Treatment (25 lbs.)	Row Width (20")	61-37 1	61-43 11	61-49 111	Mean
Sound Mature Kernels		71	71	72	71.3
Damaged Kernels		1	0	0	0.0
Sound Splits		2	4	2	2.7
Total Per Cent Kernels		73	74	74	73.7
Other Kernels		2	3	2	2.7
Total Kernels		76	77	76	76.3
Hulls		24	23	24	
Moisture		7	7	7	
Temperature		65	74	65	
Correction		+60	+24	+60	
Steinlite Reading		D47	D51	D46	
Value Per Ton		\$234.06	\$237.22	\$236.02	\$235.80

APPENDIX TABLE 5

RESULTS BY REPLICATIONS FOR MEAN GRADE AND VALUE
PER TON OF SPANISH PEANUTS GROWN ON 30-INCH ROWS
SEEDED AT THE RATE OF 25 POUNDS PER ACRE

Treatment (25 lbs.)	Row Width (30")	61-38 1	61-44 11	61-50 111	Mean
Sound Mature Kernels		70	72	71	71.0
Damaged Kernels		1	0	0	0.0
Sound Splits		4	3	3	3.3
Total Per Cent Kernels		74	75	74	74.3
Other Kernels		2	2	3	2.3
Total Kernels		77	77	77	77.0
Hulls		23	23	23	
Moisture		7	7	7	
Temperature		74	65	65	
Correction		+24	+60	+60	
Steinlite Reading		D50	D46	D47	
Value Per Ton		\$237.22	\$239.18	\$237.22	\$237.87

APPENDIX TABLE 6

RESULTS BY REPLICATIONS FOR MEAN GRADE AND VALUE
PER TON OF SPANISH PEANUTS GROWN ON 40-INCH ROWS
SEEDED AT THE RATE OF 25 POUNDS PER ACRE

Treatment (25 lbs.)	Row Width (40")	61-39 1	61-45 11	61-51 111	Mean
Sound Mature Kernels		69	71	71	70.3
Damaged Kernels		1	0	0	0.0
Sound Splits		3	4	3	3.3
Total Per Cent Kernels		72	74	74	73.3
Other Kernels		3	3	3	3.0
Total Kernels		76	77	77	76.7
Hulls		24	23	23	
Moisture		7	7	7	
Temperature		65	74	65	
Correction		+60	+24	+60	
Steinlite Reading		D46	D49	D47	
Value Per Ton		\$232.10	\$237.22	\$237.22	\$235.51

VITA

Clarence E. Ryan

Candidate for the Degree of

Master of Science

Report: THE INFLUENCE OF PLANT POPULATION ON YIELD AND GRADE OF THE ARGENTINE VARIETY OF SPANISH PEANUTS.

Major Field: Rural Adult Education

Biographical:

Personal Data: Born at Yale, Oklahoma, July 12, 1918, the son of H. C. and Mary Ryan.

Education: Received elementary education at Lone Mound School in Payne County; secondary education at Norfolk High School, Payne County, graduating May, 1936. Received the Bachelor of Science degree from Oklahoma State University, Stillwater, Oklahoma, with a major in Agronomy, in May, 1940. Engaged in postgraduate study toward the degree of Master of Science at Oklahoma State University, Stillwater, Oklahoma, from June, 1953, to June, 1962.

Experience: Born and reared on a farm. Employed with A.S.C., Stillwater, Oklahoma, from June, 1940, until July, 1941. Employed with Farm Credit Administration, Wichita, Kansas, July, 1941, to August, 1941. Employed with Soil Conservation Service in Alabama, August, 1941, to January, 1942. Employed with General Accounting office of A.S.C., Stillwater, Oklahoma, January, 1942, to October, 1942. Served in U. S. Air Force in the Pacific from October, 1942, until January, 1946. Served as Assistant County Agent in LeFlore County, Oklahoma, from June, 1946, until October, 1948. Employed as County Agricultural Agent of Johnston County, Oklahoma, since October, 1948.