International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2019): 7.583

Effects of Sowing Dates and Rates on Secondary Peanut and Soybean Yield

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Abstract: ***In the light sierozem soils of Kashkadarya region, the average yield of secondary peanut was 26.3 centner per hectare in the late sowing of 280,000 seeds, compared to the first period, the average grain yield was 1.6-3.9 centner per hectare. In the case of secondary sowing of soybeans in the early period of sowing 300 thousand pieces per hectare, the yield was 23.6 centner per hectare, and it was reached to take additional 3.2 centner yield per hectare compared to the second period.***

Keywords: light sierozem soil, peanut, soybean, repeated, date, rate, yield, hectare, centner, grain

1. Introduction

Today, in the world agricultural practice, it is achieved to the widespread introduction of new technologies for soil conservation, resource conservation, improving the agrobiological properties of soils and the production of high quality crops.

According to data of the FAO, peanutis grown in 117 countries around the world, covering 56 percent of the Asian continent and 40 percent of Africa. Soybean is grown on more than 109.7 million hectares of land in the world, the area under crops is growing by 4-5% per year, and more than 370 million tons of soybeans are harvested annually. Gross output in the United States amounted to 117.3 mln. tons, in Brazil 96.2 mln. tons, in Argentina 58.8 mln. tons, in China 11.9 mln. tons, Canada 5.8 mln. tons.

Extensive measures are being taken to further develop the agriculture of the country, in particular, to fully assured the needs of the population in food and other agricultural products and industrial raw materials. The Action Strategy of the Republic of Uzbekistan for 2017-2021 pays special attention to "modernization and accelerated development of agricultural production, large-scale cultivation oil crops as a secondary crop and increase oil production".

2. Materials and Methods

Irrigated light sierozem soils in the experimental field have been irrigatedand engaged with farming before. The soils are medium according to mechanical composition, the depth of placement of low-salinity groundwater is 3.0-3.5 meters, low mineralization (2.5-3g /l).

3. Research Results

According to the results of the experiment on grain yield in 2018, when peanuts are sown in the early period (25.06-05.07), the average grain yield is 21.5 centner / ha, when sowing were 230 thousand, 280 thousand, and 330 thousand the average yield was 23.3-24.5-23.7 centner / hectare. When secondary peanuts were planted in late date (5.07-15.07), it was found that the grain yield was higher than in the first sowing period. According to the data obtained, the average yield in variants 5thand 6thof the experiment was 22.1 c/ha and 23.5 c/ha, respectively, the yield of variants 1stand 2ndoptions in the 1stsowing period was taken 2.7-0.6 c/ha, respectively. The yield of options 7thand 8thwere found to be large 1.7-0.7 centner compared to the yield of options 3rdand 4th.

According to the results of the experiment obtained in 2019, the grain yield of peanuts was repeated the same laws were obtained in 2018. During the first sowing period, the average yield was 20.9 c/ha when 180,000 seeds were sown.When they were sown 230, 280 and 330 thousand pieces per hectare, they were amounted to 22.5, 23.6 and 23.1 c/ha, respectively. When 180, 230, 280 and 330 thousand seeds were planted per hectare during the second sowing period, the average grain yield was 21.5; 22.9; 25.3 and 23.8 centner / ha, respectively, additional yields were harvested compared to the first sowing period; 0.6; 0.4; 1.7 and 0.7 centner per hectare.

According to the results of the experiment in 2020, If the average yield of peanuts was 22.1 c/ha, when 180,000 piece were sown per hectare in early sowing, when sown in 230, 280 and 330 thousand units per hectare, respectively,it was taken the yield of 23.7 c/ha; 25.8 c/ha and 25.3 c/ha, respectively. The average yield of peanut was 23.7 t/ha and 25.5 t/ha in the late sowing date (05.07-15.07), respectively when sown at 180 and 230 thousand, and 27.8 and 26.4 c/ha, respectively when sown at 280 and 330 thousand. The highest yield was observed in variant 7, which was 27.8 c/ha.

According to the three-year data on grain yield of peanut, in the first period (25.06-05.07) the average grain yield was 21.5 c/ha when 180,000 pieces of peanutwas planted, and when sown at 230, 280,330 thousand / piece it was taken 23,1; 24,5 24,0 c/ha, respectively, and the increase of sowing norms in the 1stsowing period in peanuts provided an additional grain yield of 1.6-3.0 c/ha. During the second sowing of peanut, the same patterns were observed, the grain

yield was 22.4, 24.0, 26.3, 24.9 c/ha according to the sowing norms, the additional yield was found to be 1.6-3.9 c/ha.
It should be noted that the relatively high yield of peanuts was observed in the late sown variants, the highest grain yield was determined in the 7thvariant of the experiment, with an average of 26.3 c/ha per hectare in three years.

This is 1.8 c/ha higher than the yield of option 3 grain sown at the same rate early. The same patterns were observed in options 5, 6 and 8 of the experiment, where the additional grain yield was 0.9 c/ha, respectively.

According to the data obtained in 2018 on the repeated crop soybean studied in the experiment, the average grain yield was 19.7 c/ha when sowing 200,000 seeds per hectare according to the sowing norms of grain yield when sowing soybeans in the early period (25.06-05.07), and when 250, 300 350,000 units were planted per hectare, the average yield was found to be 20.5-24.7-23.1 c/ha. It was found that the grain yield was higher when the repeated soybean was planted at an early stage than at the second sowing date. In the 9thand 10thvariants of the experiment, the average yield was 19.7 c/ha and 20.5 c/ha, respectively, it was determined to be 2.6-1.8 c/ha, respectively the yields of the 13thand 14thvariants in the 2ndsowing date, and the yield of 16 options was found to be 3.2-0.7 c/ha larger per hectare.

According to the results of the experiment in 2020, the average grain yield of soybeans in the first sowing datewas 19.1 c/ha at 200 thousand pieces per hectare, and it was found to be 19.9, 24.0, 22.5 c/ha, respectively when sowing at 250, 300 and 350 thousand units per hectare. When sowing 200, 250, 300 and 350 thousand pieces per hectare during the second sowing of soybeans, the average grain yield was 16.5; 18.1; 19.9 and 21.6 c/ha, respectively, it was 2.6; 1.8; 4.1 and 0.9 c per hectare compared to the first sowing date;. The highest yield was observed in variant 11 of the experiment and it was 24.0 c/ha.

According to the average three-year data on soybean grain yield, soybeans were sown at 200 thousand, the average grain yield of 18.6 c/ha in the first period (25.06-05.07), the soybeans were sown at 250.300 per hectare, it was19.3, 23.6, 22.0 c/ha, it was provided to take 0.7-5.0 c/ha of grain yield additionally by increasing the sowing norms in the 1stsowing date in the soybean from 200 thousand to 300 thousand pieces per hectare. During the second sowing of soybeans, the same patterns were observed, the grain yield was 17.0, 18.7, 20.4, 22.1 c/ha according to the sowing norms, and it was found to be1.7-3.4 c/ha according to the sowing norms of additional crops.

It should be noted that relatively high yields in the soybean were observed in the early sowing varieties, the highest grain yield was detected in the 11thvariant of the experiment, averaging 23.6 c/ha. This is 3.2 c/ha higher than the yield of variant 15 seeds sown in the late date at the same rate. The same patterns were observed in variants 9 and 10 of the experiment, where the additional grain yield was 1.6, 0.6 c/ha, respectively (*data are given in Table 1*).

Table 1: Grain yield of nuts and soybeans, c/ha

Options №	Crop types	Sowing dates	Sowing rates ha/tho piece	2018 average yield	2019 average yield	2020 average yield	Average threeyears yield	Additional yield	
								according to sowing dates	according to sowing rates
1	Peanut	25.06-05.07	180	21,5	20,9	22,1	21,5		
2			230	23,1	22,5	23,7	23,1		1,6
3			280	24,2	23,6	25,8	24,5		3,0
4			330	23,7	23,1	25,3	24,0		2,5
5		05.07-15.07	180	22,1	21,5	23,7	22,4	0,9	
6			230	23,5	22,9	25,5	24,0	0,9	1,6
7			280	25,9	25,3	27,8	26,3	1,8	3,9
8			330	24,4	23,8	26,4	24,9	0,9	2,5
9	Soybean	25.06-05.07	200	19,7	16,9	19,1	18,6	1,6	
10			250	20,5	17,5	19,9	19,3	0,6	0,7
11			300	24,7	22,0	24,0	23,6	3,2	5,0
12			350	23,1	20,3	22,5	22,0	-0,1	3,4
13		05.07-15.07	200	17,1	17,5	16,5	17,0		
14			250	18,7	19,3	18,1	18,7		1,7
15			300	20,5	20,9	19,9	20,4		3,4
16			350	22,2	22,6	21,6	22,1		5,1

Sd=0,24 $cLSD_{05}$=0,52$cLSD_{05}$%=0,72%
Sd=0,12 $cLSD_{05}$(A)=0,26$cLSD_{05}$%=0,38%
Sd=0,17 $cLSD_{05}$(B)=0,37$cLSD_{05}$%=0,51%

Sd=0,49 $cLSD_{05}$=1,05$cLSD_{05}$%=1,52%
Sd=0,24 $cLSD_{05}$(A)=0,52$cLSD_{05}$%=0,74%
Sd=0,35 $cLSD_{05}$(B)=0,75$cLSD_{05}$%=1,04%

Sd=0,26 $cLSD_{05}$=0,56$cLSD_{05}$%=0,87%
Sd=0,13 $cLSD_{05}$(A)=0,28$cLSD_{05}$%=0,43%
Sd=0,18 $cLSD_{05}$(B)=0,39$cLSD_{05}$%=0,63%

Sd=0,31 $cLSD_{05}$=0,67$cLSD_{05}$%=1,22%
Sd=0,15 $cLSD_{05}$(A)=0,32$cLSD_{05}$%=0,56%
Sd=0,22 $cLSD_{05}$(B)=0,47$cLSD_{05}$%=0,76%

4. Conclusion

In the light sierozem soils of Kashkadarya region, 280,000 seeds per hectare in the late (05.07-15.07) period and 300,000 soybeans per hectare in the early (25.06-05.07) date will provide high yields. Also, in accordance with the sowing dates and rates, the late sowing date is 1.8 and 3.9 c/ha higher than the early sowing date of peanut, and it was

achieved to take 3.2 and 5.0 quintals additional grain in the early sowing date compared to the late sowing date.

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