NOVATEUR PUBLICATIONS
INTERNATIONAL JOURNAL OF INNOVATIONS IN ENGINEERING RESEARCH AND TECHNOLOGY
[IJIERT] ISSN: 2394-3696 Website: ijiert.org
VOLUME 10, ISSUE 3, Mar. -2023

DEVELOPMENT OF INDIGOFERA PLANT AS A REPEAT CROP PLANTED AFTER WINTER WHEAT

Yoqubov Gayrat Kuvandikovich,
Candidate of Agricultural Sciences Associate Professor, Urganch State University,
gayratinigoae@gmail.com

Nurullaeva Manzura Shavkatovna,
Doctor of Philosophy (PhD) in Agricultural Sciences, Associate Professor,
manzuramsh646@mail.ru

Yoqubov Shuxrat Kuvandikovich,
Urganch State University, student of Master degree,
shuhratcrotalaria@mail.ru

Abstract:
In this article, the influence of mineral fertilizers on the growth development of indigofera planted after wheat and the increase in the height of the fruit, the change in the number of branches, depending on the fertilizer rate given. In addition, the dry mass collected by the plant, the amount of seeds and other indicators were analyzed.

Keywords: wheat, plant, fertilizer, soil, planting, branches, seeds.

A number of scientific research works on the cultivation of leguminous crops after winter wheat have been carried out. Based on these, in addition to our experience, the influence of nitrogen fertilizer rates on the maintenance of Indigofera plant as a repeat crop after winter wheat and its biomass yield was studied. It also consists in improving the agrophysical and agrochemical properties of the lands freed from winter wheat and obtaining additional economic income by extracting paint pigment from the above-ground biomass of the plant [1,3].

The most optimal option was selected from our experiments, that is, when the soil was plowed and planted in the field, the growth, development, and biomass yield of the plant were studied. Experiments were conducted in the field experiment farm of Urganch State University in the conditions of soils with medium sandy loam. The soil of the experimental area is moderately saline, in the 0-30 cm layer, chlorine ions were 1.05 mg per 100 g of soil, sulfate ions were 2.05 mg per 100 g of soil, dry residue was 0.41% [2 ,4,5].

Before the experiment, the amounts of humus in the 0-30 and 30-50 cm layers of the soil were 0.65 and 0.40%, total nitrogen 0.080 and 0.060%, total phosphorus 0.100-0.090%, N-NO3 – 15.1 and 10.5 mg. /kg, mobile P2O5 was 13.1 and 8.9 mg/kg, and exchangeable K2O was 120 and 110 mg/kg. It was found that the experimental field is under-supplied with nutrients. Based on the experimental system, before planting, all options were given 100 kg/ha of phosphorus, 30 kg/ha of potassium fertilizers, the soil was plowed to a depth of 25-30 cm, the rice was collected, and 2-3 kg of Indigofera plant seeds were planted per hectare. i planted and watered. Since the air temperature was high after planting (June), the sprouts germinated in 4-5 days. Nitrogen fertilizer (0, 80, 100, 120, 140 kg/ha) was applied twice during the growing season: when the crop produced true leaves (50% of the annual rate) and during flowering (50%). The data obtained on the growth of the plant in years are presented in Table 1 and Appendix 21.

1 – table The effect of nitrogen fertilizer rates on the growth and formation of side branches of Indigofera planted in Angiz, 2022.

Order of options	The method of tillage	Nitrogen fertilizer rate, kg/ha	Plant height, cm					Number of lateral branches, pcs
			5.VII	20.VII	4.VIII	19.VIII	3.IX	16.VIII
1	The soil is plowed 25-30 cm and planted in the field	-	3,8	18,5	25,4	48,5	54,5	4,1
2		80	8,5	21,2	35,5	56,4	64,8	6,2
3		100	9,7	23,0	36,5	62,4	73,4	7,0
4		120	11,7	21,5	33,4	58,8	77,5	7,8
5		140	12,3	23,8	37,5	59,8	78,5	7,2

Note: All options were given 100 kg/ha phosphorus and 30 kg/ha potassium fertilizers before planting.

It should be mentioned that in any repeated cropping, compared to the main crop, relatively lower data are obtained on indicators such as plant growth, development, dry matter accumulation. Because it is observed that the period of action is short and that it does not get enough effective temperature, and it was caused by abiotic factors. Therefore, in this experiment, the data obtained on the growth and development of the Indigofera plant were slightly lower in terms of general indicators than when it was grown as a main crop.

According to the results of the experiment in yi 3.8 cm, 8.5 cm in option 2 with 80 kg/ha of nitrogen fertilizer, 4.7 cm higher than option 1. At the end of the observations (03.IX), the height of the plant in option 1 was 54.5 cm and the number of side branches was 4.1 units, compared to option 2, the height of the plant was 10.3 cm and the number of side branches was less by 2.1 units was determined. It was found that there is an effect of the applied N-fertilizer standards on the emergence of differences between these options.

Accordingly, in the 3rd option, where 100 kg/ha of nitrogen fertilizer was applied, the plant height was 9.7 cm at the beginning of the application period. At the end of the application period, the height of the plant is 73.4 cm and the number of side branches is 7.0 units. Compared to the 4 options where 120 kg/ha nitrogen fertilizer is applied, the height of the plant is 2.0 cm and the number of side branches is 0. There were 8 less. These indicators were 3.0 cm higher than the control variant, and the number of side branches was 3.7 more. It was observed that the differences in these variants have a moderate effect of nitrogen fertilizers on the growth of the plant and the formation of side branches.

In the 5 options where 140 kg of N-fertilizer was applied per hectare, the plant height was 12.0 cm at the beginning of the application period. At the end of the application period, the height of the plant is 78.5 cm and the number of side branches is 7.2 pcs. Compared to the 4 options where 120 kg/ha of nitrogen fertilizer was applied, it is 0.6 cm at the beginning of the application period, at the end of the application period It was observed that it was 1.0 cm more and the number of side branches was 0.6 less.

So, when using nitrogen fertilizers at the rate of 140 kg/ha for plant growth and development of side branches, the general indicators were almost not different from the option where nitrogen was used at 120 kg/ha. The growth of the plant and the formation of lateral branches remained the same as in the previous years, and similar data were obtained.

As a result, 100 kg/ha of phosphorus, 30 kg/ha of potassium fertilizers were applied to the soil before plowing to grow Indigofera as a repeat crop after winter wheat, and 120 kg/ha of nitrogen fertilizer was added during the growing season. It was determined that the most optimal conditions will be created.

Before harvesting the Indigofera plant grown as a repeated crop, the amount of green and dry biomass was determined in all varieties (Table 2).

2-table Effect of mineral fertilizers on green and dry biomass of replanted Indigofera, s/ha (2022)

Order of options	The rate of mineral fertilizers, kg/ha			Leaf and stem s/ha	
	N	P_2O_5	K_2O	In a natural state	Dry
1	0	100	30	28,0	14,5
2	80	100	30	51,0	22,5
3	100	100	30	59,7	22,2
4	120	100	30	67,2	23,0
5	140	100	30	69,6	23,4

According to the analysis of the obtained data, the green and dry biomass of leaves and stems of the plant in option 1, which was not given nitrogen fertilizer for two years on average, was 28 and 14.5 s/ha, respectively. In 2 options where nitrogen fertilizers were applied at the rate of 80 kg/ha, these indicators were proportionally 51.6 and 22.5, and the total amount of green and dry biomass from the control option was 50 and 25 s/ It's been a long time. In option 3, where nitrogen fertilizer was applied at the rate of 100 kg/ha, leaf+stem content was 59.7 and 22.2 s/ha, and increased by 31.7 and 8 compared to the control option. In 4 options, where nitrogen was applied at the rate of 120 kg/ha, the amount of total green and dry biomass was 67.2 and 23 s/ha, and compared to the control option, it was 39.2 -8.5 s/ha higher. , but it was found that in option 5, where 140 kg/ha of nitrogen fertilizer was used, green mass and dry biomass were 41.6-8.9 s/ha less.

In conclusion, it was found that nitrogen fertilizers at the rate of 120 kg/ha had an acceptable effect on the accumulation of above-ground biomass of the plant. In this case, the Indigofera plant is grown to obtain biomass as a repeat crop after winter wheat. Therefore, the vegetation period of the crop is short, and the plants absorb less nutrients (compared to the main crop).

References

1. Yoqubov G‘.Q. degradatsiyaga uchragan tuproqlarda Indigofera tinctoria L. o‘simligini yetishtirishning agroekologik va biotexnologik xususiyatlari (Xorazm viloyati misolida). Qishloq xo‘jaligi fanlari nomzodi ilmiy darajasini olish uchun yozilgan dissertatsiya. Toshkent-2012 y.
2. Jenny Balfour-Paul “Indigo Plants and Making of their Dye” , Sublime indigo 1987: p. 43
3. Bray Francerca. “Agriculture” in Science and Civilisation in China (ed, NEEDHAM Joseph), Cambridge, 1984, VOL. 6. Part 11: p. 277, 279, 589- 593.
4. The Centre for Economic Botany at the Royal Botanic Gardens, Kew, London, has a large collection of indigo material from all over the world.(64).
5. Taylor H.M., Gardner H.R. Penetration of cotton toproote as influenced by dusk density, biostructure and strength of soie. Soil Science. 1963. V. 96. p.153-156.