European Journal of Agricultural and Rural Education (EJARE)
Available Online at: https://www.scholarzest.com
Vol. 2 No. 12, December 2021,
ISSN: 2660-5643

IMPACT OF IRRIGATION REGIME AND FERTILIZATION ON ECONOMIC EFFICIENCY IN THE CULTIVATION OF EARLY POTATOES

Ishimov Saitmurat Xaitovich
Termez Institute of Agrotechnology and Innovative Development, PhD

Article history:

Received: September 28th 2021
Accepted: October 11th 2021
Published: December 13th 2021

Abstract:

The article presents the results of the cost-effectiveness of the combined application of fertilizer standards in different irrigation methods of sabella and selbano medium-ripe varieties of potatoes.

Keywords: Tomorrow's potatoes are medium-ripe varieties. number of irrigations. irrigation regime. irrigation norm. fertilization productivity. tannarx. net income. rate of return.

INTRODUCTION.

Increasing the yield of early potatoes in the conditions of Surkhandarya region, reducing water consumption per quintal of crop in many respects by choosing varieties that are suitable for the disadvantages of these conditions. wide application. depends on the development of water-saving irrigation procedures and technologies, as well as optimal fertilizer standards.

Taking into account the above. Number of different irrigations of potato medium-ripe sabella and selbano varieties in 2018-2020. we studied the effectiveness of cultivation in the order and fertilization standards.

Field experiments were carried out in Surkhan farmers' association of Jarqurghon district in the conditions of ancient irrigated light gray soils.

3 fertilizer standards in the study (N_{150} P_{120} K_{75} kg / ha (control). 20 t / ha manure N_{150} P_{120} K_{75} kg / ha and 20 t / ha manure + N_{200} P_{160} K_{100} kg / ha) -1-5. 8 times 1-2-5 and 9 times 1-2-6) tested. Sowing was carried out on 5–10 February at a depth of 5–7 sm in the scheme 70x20 sm. The area of Delyanka is 336 m^2 according to the order of irrigation and variety. 112 m^2 of fertilizer. The number of repetitions was 4.

Our research shows that. In the years of the experiment, the limited field moisture capacity in the 0-50 cm layer of soil was 20.20-20.84%. volume mass 1.30-1.36 g / sm^3, limited field moisture capacity relative to the volume mass 27.09-27.47%, in the 0-70 cm layer 20.61-21.19, 1.31-1.37 g / sm^3 and 27.00-28.63%, respectively, in the 0-100 cm layer 19.70–20.20%, 1.32–1.39 g / sm^3, and 26.49–27.38%, respectively.

The duration of irrigation intervals differs in the number and order of irrigation, the duration of irrigation intervals in the order of 1-1-5 is 7 times. 10 days, 8 times in 2-5 order, 1st irrigation interval 15-16 days, 2nd irrigation 11-12 days, 3rd irrigation 9-10 days, 4-8 irrigation interval 8-9 days;

9 times in 1–2–6 order, and 1 watering in 15–16 days. 2nd irrigation is 11-12 days, 3rd irrigation is 9-10 days, 4-9 irrigations are 7-9 days.

In the number and order of irrigations studied, the actual irrigation and seasonal irrigation norms, as well as the soil and soil moisture relative to the limited field moisture capacity, changed significantly. Irrigation rate is 1050-1200 m^3 / ha during the period of "sprouting" (0-50 sm layer) when watering is carried out 7 times in the order 1-1-5, 780-850 m^3 during the period of "combing-flowering" (0-70 sm) / ha, during the period of "flowering - yellowing" (0-100 cm) 750-820 m^3 / ha, seasonal irrigation norm 5580-6150 m^3 / ha, relative soil moisture content of the field 65-75-75% formed. Its differentiation did not exceed the recommended limit of 3.

When irrigation is carried out 9 times in 1-2-6 order, the irrigation norms for the inter-phase periods are 1010-1130 m3 / ha during the "germination" period (0-50 sm) and 450- during the "flowering-flowering" period (0-70 cm). 550 m^3 / ha, during the "flowering-yellowing" period (0-100 cm) 420-530 m^3 / ha, seasonal irrigation norm 4430-5410 m^3 / ha, soil moisture relative to the limited field moisture capacity is 65-85-85% did.

INDICATORS OF ECONOMIC EFFICIENCY WHEN CULTIVATING MEDIUM-RIPE VARIETIES OF POTATOES UNDER DIFFERENT IRRIGATION REGIMES AND FERTILIZER STANDARDS

It was found that the number and order of irrigation and fertilization standards have a significant impact on the change in soil volume in potato seedlings. When watering was given 7 times in 1-1-5 order, in both studied varieties N_{150} P_{120} K_{75} kg / ha, the volume mass of the soil before irrigation was 1.32 g / cm3, after 1 watering in 0-10 cm layer, 1.34; after all irrigations 1.37 g / sm^3, 1.36 in the 10-20 sm layer and 1.39 and 1.45 g / sm^3 in the 20-30 cm layer, compacted to 0.04-0.08 g / sm^3, the volume mass increased and its soil 10-20 and 20- It was observed to be noticeable in 30 cm layers.

It was noted that when the irrigation was carried out 9 times in 1-2-6 order, the soil volume mass was more densely compacted and in the 0-30 sm layer was 0.06-0.10 g / sm^3 more than the control.

Density of soil volume mass was found to be reduced in the variant where organic and mineral fertilizers were applied at 20 t / ha N_{200} P_{160} K_{100} kg / ha.

If the volume mass of the soil in the 0-30 cm layer was the same 1.36-1.38 g / sm^3 in the 7th and 9th irrigations after the 1st irrigation of the two studied potato varieties, the tendency to decrease after the 1st irrigation was 1.39-1.41 g / sm^3. Under the conditions of such a soil mass, a favorable opportunity is created for the growth and development of the potato plant, the formation of the crop.

Yield (t / ha), the total cost per hectare (thousand soums) in the calculation of the cost-effectiveness of growing potatoes in different numbers, procedures and technologies, as well as fertilizer standards; selling price of one quintal of potatoes (soums); cost of one quintal of potatoes (sum); cost of production per hectare (thousand soums); net income per hectare (thousand soums); rate of return (%) and so on.

The correct calculation of the economic efficiency of potato growing in potato growing depends primarily on the correct determination of the total cost per hectare.

According to our analysis, the cost of 1 quintal of potatoes is 79.1-102.2 thousand soums, net income is 3.9-12.2 million soums, profitability is 17.4-15.8%, 9 times 1-2 times. When irrigated in 6 orders, it was 66.3-87.6 thousand soums, 8.5-19.2 million soums and 37.0-81.0%, respectively.

(1-table)

№	Irrigation		Fertilizer Standards		Productivity.T / ha	Expenditures per hectare, soums	Cost of one quintal of potatoes, soums	Cost of one quintal of potatoes, soums	Cost of one quintal of potatoes, soums
	size	order	Manure t / g	kg.ga					
Sabello navi									
1	7	1-1-5 назорат	-	$N_{150}P_{120}K_{75}$ (назорат)	22,3	22.792.000	102206	3.968.000	17.4
2	--	---	20	$N_{150}P_{120}K_{75}$	25,4	23.117.000	91012	7.363.000	31.9
3	--	---	20	$N_{200}P_{160}K_{100}$	27,2	23.417.000	86092	9.223.000	39.4
4	8	1-2-5	-	$N_{150}P_{120}K_{75}$	24,5	22.872.000	93355	6.528.000	28.5
5	--	---	20	$N_{150}P_{120}K_{75}$	28,0	23.197.000	82846	10.403.000	44.8
6	--	---	20	$N_{200}P_{160}K_{100}$	29,4	23.492.000	79905	11.788.000	50.2
7	9	1-2-6	-	$N_{150}P_{120}K_{75}$	26,2	22.942.000	87565	8.498.000	37.0
8	--	---	20	$N_{150}P_{120}K_{75}$	30,6	23.282.000	76085	13.438.000	57.7
9	--	---	20	$N_{200}P_{160}K_{100}$	32,7	23.595.000	72156	15.645.000	66.3
Selvano navi									
1	7	1-1-5 Control	-	$N_{150}P_{120}K_{75}$ (назорат)	24,5	22.847.000	93253	6.553.000	28.7
2	--	---	20	$N_{150}P_{120}K_{75}$	28,6	23.197.000	81108	11.123.000	48.0
3	--	---	20	$N_{200}P_{160}K_{100}$	29,7	23.485.000	79074	12.155.000	51.8
4	8	1-2-5	-	$N_{150}P_{120}K_{75}$	27,4	22.946.000	83745	9.934.000	43.3
5	--	---	20	$N_{150}P_{120}K_{75}$	32,7	23.311.000	71287	15.929.000	68.3
6	--	---	20	$N_{200}P_{160}K_{100}$	33,9	23.608.000	69640	17.072.000	72.3
7	9	1-2-6	-	$N_{150}P_{120}K_{75}$	29,3	23.017.000	78556	12.143.000	52.8
8	--	---	20	$N_{150}P_{120}K_{75}$	33,9	23.363.000	68917	17.317.000	74.1
9	--	---	20	$N_{200}P_{160}K_{100}$	35,7	23.670.000	66303	19.170.000	81.0

Irrigation with the lowest cost (66.3-72.2 million soums), the highest net income (15.6-19.2 million soums) and the level of profitability (66.3-81.0%) by varieties was carried out 9 times in 1-2-6 order, 20t / ha of manure + N_{200} P_{160} K_{100} kg / ha was obtained at the rate of fertilizer application. Relatively low cost (by varieties) (68.9-76.1 thousand soums), high net income (13.4-17.3 million soums) and profitability (57.7-74.1%) 9 times in 1-2-6 order 20t / ha of manure + N_{150} P_{120} K_{75} kg / ha was recorded in the variant with mineral fertilizers.

CONCLUSION.

When irrigating sabella and selbano varieties of potatoes 9 times in 1-2-6 order, the irrigation criteria for the inter-phase period are 1010-1130 m^3 / ha during the "germination" period (0-50 cm), and during the "flowering period" (0-70 cm). 450-550 m^3 / ha, during the period of "flowering-yellowing" (0-100 cm) 420-530 m^3 / ha, seasonal irrigation norm 4430-5410 m^3 / ha, normative irrigation, 20t / ha manure per hectare + N_{200} P_{160} K_{100} kg / ha fertilizer application provided high yields (32.7-35.7t / ha) and cost-effectiveness (66.3-81.0% yield rate).

REFERENCES:

1. Decree of the President of the Republic of Uzbekistan dated March 29, 2018 No PF-5388 "On additional measures for the accelerated development of fruit and vegetable growing in the Republic of Uzbekistan."
2. Astonaqulov T.E- Productivity and semen quality of potatoes at different regimes orosheniya on the background of different doses of mineral fertilizers in the conditions of lugovoserozemnyx soil Zarafshan valley. Avt-kand.diss. Samarkand. 1980-20s.
3. Abdukarimov D.T Early potato T., 1987.22-101 p
4. Balashev N.N Vyrashchivanie kartofelya i ovoshchen v uslovniyax orosheniya M.Kolos 1976-304 s.
5. Ostonakulov T.E. Xamzaev.A.X. Southern potato growing. T. 2015,348 pages.
6. Websites www.fao.org.www.agro.uz