

INFLUENCE OF THE HARVEST PERIOD AND FERTILIZERS ON YIELD OF JERUSALEM ARTICHOKE

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Abstracts

The highest yield of leaves and stems on both backgrounds of mineral nutrition was obtained at harvest in late August, the tubers yield was increased by digging them in early October. Introduction of nitrogen-phosphorus-potassium fertilizers in norm $N_{60}P_{60}K_{90}$ leads to a greater increase in the collection of tubers of Jerusalem artichoke than the mass of leaves and stems. In a dry year, the yield increase from applied fertilizers as the aboveground mass and tubers is lower than in good years. The impact of fertilizer was higher under late harvesting of tubers of Jerusalem artichoke.

Key words: yield, Jerusalem artichoke, mineral fertilizers, planting dates

Experiences were spent in 2009, 2010 and 2012 years in the research-and-production center of Chuvash agricultural academy. Before landing of tubers to 2 and 4 variants brought mineral fertilizers with the subsequent cultivation. Tubers landed on depth of 6-8 sm under the scheme 70x40 sm. The purpose of our researches was studying influence of the harvest period and fertilizers on yield of Jerusalem artichoke.

Yield of Jerusalem artichoke substantially defined by terms of the mowing of plants and presence of nutrients in ground [1-5]. Term of mowing of Jerusalem artichoke and mineral fertilizers influence many major parameters - rates of growth and development of plants, yield of green and dry weight, and also gathering of tubers. In 1 year of researches yield of above-ground weight in 1 variant has made 21.0 ton/hectares, at entering mineral fertilizers this parameter has increased up to 29.3 ton/hectares (table 1).

Table 1 - Yield of green mass of Jerusalem artichoke, t/ha

Vari- ant	The level of fertilizers	Date of harvest of		Year of research			In an average 3 years
		the above- ground mass	tubers	2009	2010	2012	
1	-	30.VIII	15.IX	21,0	11,1	23,5	18,5
2	$N_{60}P_{60}K_{90}$	30.VIII	15.IX	29,3	14,5	31,8	25,2
3	-	16.IX	1.X	18,2	15,7	20,4	18,1
4	$N_{60}P_{60}K_{90}$	16.IX	1.X	25,3	19,4	28,7	24,5

In 3 variant at late mowing gathering weights of leaves and stalks has decreased up to 18.2 ton/hectares and in 4 variant yield was 25.3 ton/hectares. In 2010 the drought has led to decrease in yield. Optimum conditions for growth and developments of plants were in 2012. In a control variant the weight of leaves and stalks by time of mowing was 23.5 ton/hectares - that more than in 2 times exceeds parameters of droughty 2010. In 4 variant at late mowing with entering fertilizers the parity is less, a difference in 1.5 times. Nevertheless, also in this variant the increase in yield of above-ground weight in comparison with 2010 was essential and was equaled 9.3 ton/hectares.

On the average for 3 years of researches low gathering of green weight were observed in 1 and 3 variants, that it is without application of fertilizers. Late mowing did not promote an increase in productivity of leaves and stalks. Entering of fertilizers into norm $N_{60}P_{60}K_{90}$ promotes powerful development of plants of Jerusalem artichoke. Both in the second, and in the fourth variants the significant increase of above-ground weight - accordingly on the average for 3 years on 6.7 and 6.0 ton/hectares is observed.

It is necessary to note, that using of fertilizers promotes substantial increase of gathering of tubers (table2).

Table 2 - Gathering of tubers, t/ha

Vari- ant	The level of fertilizers	Date of harvest of		Year of research			In an average 3 years
		the above- ground mass	tubers	2009	2010	2012	
1	-	30.VIII	15.IX	9,3	4,5	22,8	12,2
2	$N_{60}P_{60}K_{90}$	30.VIII	15.IX	18,8	6,2	33,1	19,4
3	-	16.IX	1.X	12,7	6,8	26,0	15,2
4	$N_{60}P_{60}K_{90}$	16.IX	1.X	22,0	10,1	37,6	23,2

Application of mineral fertilizers in norm $N_{60}P_{60}K_{90}$ has led to additional gathering of tubers at a rate of 7.2 ton/hectares in early term of mowing and 11.0 ton/hectares at late term of mowing. At later term of mowing yield of tubers is increased. So, in 3 variant at mowing in the beginning of October gathering of tubers is equaled 15.2 ton/hectares, that on 3.0 ton/hectares it is more, than in 1 variant at excavation of tubers in the middle of September. The dispersive analysis shows, that with 95 %-s' probability the difference between all variants is essential. In droughty 2010 the least yield of tubers is received.

Conclusions. On grey soils of Chuvashiya the productivity of Jerusalem artichoke depends on terms of harvesting of the culture and of fertilizers. The best results are reached when contributing of fertilizers in rate $N_{60}P_{60}K_{90}$. The high productivity of above-ground masses is received when mowing at the end of the august. The influence of the mineral fertilizers depended on forming of the conditions. At arid year gain from contributed fertilizers in yields both above-ground mass, and tubers was a low.

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