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Efficiency of growth stimulants of plants at application on sewed peat soils of Western Polisyia

Aim. To learn efficiency of application of growthfactors of plants for growing of oat and potato on the drained peat soils of Western Polesye. **Methods.** Field, laboratory, analysis of variance. In the first field experience studied influence of growthfactors on sowing of potato, in the second - on the productivity of oat. **Results.** Results over of 3-years-old researches are brought from the study of influence of growthfactors on the productivity of oat and potato on the drained Peat soils of Western Polesye. **Conclusions.** For growing of potato on the drained Peat soils the best result is provided by preseed treatment of tubers by the growthfactor of joy, that increases her productivity on 19,2%. Preseed treatment of seed of oat by a growthfactor the biofield in a norm 25 mls/of τ in composition with the complex mineral fertilizer of нiтроамофоска in a norm 5 kg/of t promote his productivity on 10%.

Keywords: growthfactors of plants, drained peat soils, increase of the productivity, structure of harvest.

Raising of problem. On the modern stage before agriculture of Ukraine difficult tasks appeared in relation to determination of directions of further development and receipt ecologically of safe products at the terms of market relations, and also (through a crisis in an economy) rational use of present material and technical resources. A failure to observe of scientifically reasonable structure of sowing, wrong duty of cultures, use of chemical preparations and mineral fertilizers, results in worsening of the ecological state of earth, id est contamination of soils by pesticides, nitrates and heavy metals. All of it induces to the study and development of the new, environmentally sound, systems of agriculture adapted to the concrete ground-climatic terms [1, 2, 7].

The search of alternative and littleexpense methods of increase of the productivity of agricultural cultures acquires for substantial здорожчання of power mediums and mineral fertilizers of the special actuality. The results of researches and productive verification testify that application of new growthfactors of plants in agriculture is one of the most accessible and highly remunerative measures of increase of the productivity of agricultural cultures [1, 6-8, 10]. In particular, in the countries of Western Europe process over growthfactors 60% sowing of grain-growing [2, 7, 10].

Influence of growthfactors on the productivity of agricultural cultures the last years widely study in the different ground-climatic zones of Ukraine. In particular, it is well-proven that their application gives an opportunity to promote the productivity of grain-growing on 7-10% [2]. At the same time on the drained Peat soils of Western Polesye of question of efficiency of growthfactors on sowing of agricultural cultures to this day remains insufficiently known.

One of basic agricultural cultures in the zone of Polesye, there is a potato that in food balance of population occupies a 2 place after grain. Substantial reserve of increase of her production are the drained peat soils that for the observance of certain agrotechnical and агромеліоративних measures give an opportunity to get the high and stable productivity of this culture [4, 9]. Among spring grain-crops on these

soils an oat is the most productive culture, besides he the least whimsical to the ground terms, fertilizer and predecessors [9].

However growing of the cultures indicated higher on the drained Peat soils is based on application of high norms of bringing of mineral fertilizers first of all phosphoric-potassium, that promotes the cost of the grown products substantially. Therefore the special actuality is acquired by the question of possibility of increase of the productivity of agricultural cultures on the drained Peat soils due to application of modern growthfactors.

Aim of researches - to learn efficiency of application of growthfactors of plants during growing of oat and potato on the drained Peat soils of Western Polesye.

Methodology of realization of researches. For the study of the questions put in-process, on the drained Peat soils of Sarnenskaya of the experimental station of Institute of water problems and land-reclamation of HAAH during 2011-2013 studied influence of growthfactors on the productivity of oat and potato.

In the first field experiment, the effects of pacemaker growth pacemakers, joy, regaplant, and stempo on seedlings of Bellarosa cultivars were studied. On all experimental variants pre-sowing treatment of potato tubers was used by a prestige chemist and two-time spraying of acrobat M fungicide cultures was carried out. Stimulants of growth of pactedin, joy and regollet were used at the same time as preserving the tuber treatment with the prestige of the drug, and the veterinary drug Potato plants in the phase of budding start. Mineral fertilizers for potatoes were introduced for basic soil tillage in the normal N45R60K120.

In the 2nd field experiment, the effect of a growth stimulator of biolan in a composition with microcosm of a complex mineral fertilizer nitroamofoska and lime sulfate $\text{Ca}(\text{OH})_2$ on the yield of oats of Chernihivsky variety 28 was studied.

Mineral fertilizers under an oat brought in the norm of P60K120.

Soils of experimental sites are low-lying, sooty soils, powerful dehydrated peat with high-powered groundwater. The capacity of peat deposits is 2.5-3 m. The reaction of the soil solution is slightly acidic with a pH of 5.0 - 5.2, submerged water is weakly mineralized - 250-270 mg / liter. Providing ground with nitrogen compounds that are easilyhydrolyzed are 170 - 200 mg / kg, mobile phosphorus compounds - 80 - 110 and potassium - 40 - 75 mg / kg.

Results of researches. The researches conducted by us testify to efficiency of application of growthfactors on sowing of oat and potato for growing on the drained peat soils (of table. 1).

1. Influence of growthfactors is on the productivity of potato of sort of Беллароза (AV for 2011-2013)

It was established that the highest yield of potatoes was provided by the treatment of tubers with the joy of preparation (50 ml / t) - 315 centners per hectare, the yield increase from its application was 51 centner / ha or 19.2%. The treatment of tubers with the rego-pellet preparation, as well as its combination with the application of crops in the phase of budding start with the STEMP preparation, increased yield by 37-42 centners per hectare, or 13.8 - 16.1%. Treatment of tubers with pacemaker growth stimulant, as well as culturing in the phase of budding with the STEMPO product, provided an increase in yields by 14 centners / ha or by 5.3%..

An important index for growing of potato is an exit of commodity tubers. Having regard to it, by us the analysis of structure of harvest, potato was conducted depending on the applied growthfactors (table. 2).

2. A structure of harvest of potato of sort of Беллароза is depending on the applied growthfactors (AV for 2011-2013)

The analysis of the structure of the potato crop shows that the Bellarosa variety is high withdrawal of product tubers. Thus, the main part of the crop (59-78%) was tubers weighing more than 80 g, the number of tubers weighing from 40 to 80 g was 18- 31% and weighing up to 40 g-4-10%. Consequently, the use of growth promoters improved the marketing of tubers and the quality of the resulting crop.

One of the dangerous meteorological phenomena that complicate agriculture in the Polissya conditions is the late spring frost, which is not safe for heat-loving crops, which includes potatoes. This is especially true for drained peatland massifs, which are located at lower relief, and their organogenic soils have low thermal

conductivity and high heat capacity. They poorly conduct heat from deep layers to superficial and quickly disappear after sunset, which leads to frostbite [3].

Literary sources indicate that growth stimulants contribute to increasing the resistance of plants to adverse weather conditions [1, 7, 8]. Our research confirms this. So, in 2012 due to frost - 0.8 and -1.1 oC (May 30 and June 1), the ground part of the potatoes suffered a severe defeat. However, in variants, which applied pre-sowing treatment of tubers with growth promoters, the damage was less and amounted to 70-75% of the terrestrial part of potato plants, whereas unprocessed areas were almost 90% affected by frost. Subsequently, in variants where pretreatment treatment of tubers was used by growth promoters, the ground mass of the potatoes was re-grown 3-4 days earlier than in non-stimulant variants.

It is well-proven scientific establishments of different countries also, that application of growthfactors assists the decline of staggered of sowing of potato illnesses [1, 4, 9]. On Peat soils, sowing of potato stronger test defeats different illnesses, in particular mionectic relief and closeness of the subground waters result also in intensive development of phytophthora [3]. Therefore the special value is acquired by possibility by means of application of growthfactors to promote firmness of plants to the defeat illnesses.

It is set by us, that treatment of tubers provided the increase of firmness of potato growthfactors to phytophthora. It follows marks also, that application of growthfactors prolonged the vegetation of potato, then, as on control surface mass of potato died off, in variants, where applied the regulators of height of plants, dying off of surface part it took place on 7-8 days later.

It is set the conducted researches, that application of growthfactor of plants the biofield on sowing of oat (both in a pure form and in composition with other preparations) for certain promotes his productivity (table. 3).

3. Influence of growthfactor the biofield on the productivity of oat of sort is Chernihiv 28 (AV for 2011-2013)

Preseed treatment of seed of oat by a growthfactor the biofield in a norm provided 25 mls/of τ increase of his productivity on 1 μ /and, or on 3,3%. Preseed treatment of seed of oat of nitroamophos in a norm provided 3 kg/of τ seed increase of his productivity on 1,2 μ /and, or on 4%. Treatment of seed did not almost influence on the productivity of oat a lime extinguished in a norm 3 kg/of τ seed.

The best result was provided by preseed treatment of seed of oat by a growthfactor the biofield in a norm 25 mls/of τ in combination with nitroamophos in a norm 5 kg/of τ seed, the increase of the productivity from their application presented 2,9 μ /and, or 10%.

Thus, the researches conducted by us testify to relatively not high efficiency of growthfactor the biofield in a norm 25 mls/of τ seed on sowing of oat on the drained Peat soils. A far the best result was provided by his combination with preseed treatment of seed by the complex mineral fertilizer of nitroamophos in a norm 3-5 kg/of t seed.

The calculations of the cost-effectiveness of the use of growth promoters indicate that the cost of an additional oat grain crop from the use of the stimulator of growth of biolan in combination with the microdoses of the complex mineral fertilizer of nitro amphoscope in the purchase prices in 2013 is 810-870 UAH / ha. Significantly more effective was the use of growth stimulators on potato plantings. Thus, the cost of an additional crop from the use of the stimulator of growth was joyful at a rate of 50 ml / t of tubers of 7620 UAH / ha. In general, from the economic point of view, the use of plant growth stimulants in oat and potato crops is justified, since the cost of drugs per 1 hectare of crop is 5-6 UAH, and their use does not require additional costs, as it can be done simultaneously with the ne- seed treatment of seed or planting material by a driller.

Conclusions

For growing potatoes on drained peat soils, the best result is the pre-sowing treatment of tubers with growth stimulator for joys, which increases its yield by 19.2%. Pre-sowing processing of oats seeds by a stimulant of growth of biolan in the normal range of 25 ml / t in a composition with a complex mineral fertilizer of nitroamo-foska in the norm of 5 kg / t increases its yield by 10%.

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