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THE "NAGRO" BIOORGANIC NANO FERTILIZER AGENT USAGE IMPACT ON WHITE CABBAGE YIELD PRODUCTIVITY AND QUANTITY UNDER THE WEST KAZAKHSTAN REGION STEP ZONE CONDITIONS

Abstract

The article presents the results of biometric indicators, and the duration of the interphase periods of growing seedlings of cabbage with different methods of cultivation and preplant treatment of seeds and seedlings of «NAGRO» bio-organic fertilizing nano fertilizer.

Ключевые слова: *white cabbage, yield productivity, the "NAGRO" bioorganic nano fertilizer agent.*

Vegetables plays significant role not only to maintain human vital forces of the person, but also as effective medicinal agents acknowledged by folk and scientific medicine. Nutritional value and medicinal properties of vegetables due to the presence in them various components different by composition and structure of chemical compounds. This ingredients has a wise spectrum of pharmacological effect on the body.

The most important tasks of the Kazakhstan vegeculture industry are production increased, expansion of assortment and improvement of product quality, year-round supply of the population with fresh vegetables.

The most common vegetable crops cultivated in our country is white cabbage, which is a universal high-yielding crop. It can be used in any form. It is a quarter of the average annual vegetable consumption per capita in the country. Cabbage is a cheap, widely available and highly useful product.

The climatic conditions and the biological characteristics of cabbage are very difficult. Due to that fact seedling method remains the main for cabbage at Western Kazakhstan region steppes. However, the modern seedling method has its drawbacks: low yield per unit area of seedling, lack of uniformity, due to the escalating, non-guaranteed survival rate, low level of mechanization of production processes, high costs and the difficult conditions of manual labor that requires its radical improvement. The effective high-quality seeds formation identification methods and the development of modern production technologies has a great scientific and practical importance in the modern researches.Special attention should be focused on the identification of advanced environmentally friendly elements seedling methods in order to increase cabbage production. That is why the aim of this research is to improve the white cabbage seedlings quality increasing methods.

The high-quality open-grounded seedlings procurement, including through the use of tape technology plays significant role in the development of vegetable growing industry agro-industrial complex (AIC). By the S. Litvinov [1999] biological and organic farming industry increasing rapidly simultaneously with the development of technical method with agricultural chemical products using. It is a strategic goal of humanity, the way of survival at the present stage.

The studies were conducted in 2014-2016 gg. in terms of teaching and experimental farm "Izdenis" in Zhangir Khan West Kazakhstan Agro-Technical University.

Objects of research: different ways of growing seedlings, homologated in the late-ripening "Kolobok F1" cabbage brand, «NAGRO» nano fertilizer.

Soil pilot area – dark brown, medium, tyazhelosugli-grained. According to the results of laboratory analyzes of soil samples of the humus content in the layer of 0 - 20cm ranges from 2.42 - 2.44%, which relates to the data of the soil slabogu-musnym. Hydrolyzable nitrogen - 3.71 - 3.88 mg / 100 g, which indicates a low security for vegetable crops on this indicator. Nitrate nitrogen - 39.2 - 39.6 mg / kg, which corresponds to an increased level of security. content of mobile phosphorus - 2.52 – 2.71 mg / 100 g, which is a low level for vegetable crops. Mobile potassium in the range of 44.4 - 51.5 mg / 100 g. In absolutely dry soil on the ground provided a high index, pH - 7.0 - 7.2.

Meteorological conditions were differ by the temperature regime and by the amount of

precipitation. The average monthly air temperature in June - August, had higher rates compare with the average long.

Experience plan:

1) Growing in a cool nursery (ground) (no picks);
2) Growing in boxes (without picking);
3) Growing in boxes (with sparring);
4) Growing in cups;
5) Growing in mesh trays.

The options were untreated seeds without fertilization, also conducted experiments with the treatment of seeds, and in the phase of 6-7 true leaves feeding «NAGRO» bio-organic fertilizing nano fertilizer. Experience repeated three times. The temperature and humidity conditions managed to be stable as it required for cabbage seedlings while growing seedlings. The experiments were guided by the guidelines envisaged in the "Methodology of experimental work in the vegetable and rs in vemelon" and "Guidelines on the application of growth regulatogetable and melon.". Phenological observations, seedling quality assessment carried out by the method of research in vegetable and melon. The area of leaf surface counted by N.F.Konyaev. The mathematical processing of the data was performed according to the B.A. Dospehov method.

«NAGRO» bio-organic fertilizing nano fertilizer properties:

• growth promoting effect (increase in plant root system 3-10 times the width of the sheet plate to 100% in weight of the autonomic 2-3)

• anti-stress effect (removes pesticide stress, increases drought, frost)

• properties of fungicides, insecticides (70-80% of the actions of chemicals)

• adaptogen properties (increases germination energy and seed germination to 80-96%, the survival rate of seedlings)

• an increase in harvest of 35 to 150%

• Reducing the ripening of agricultural crops in 7-10 days

• improving the quality of agricultural products (increase of gluten in wheat by 3-8 units., Sugar beet sugar by 20-80% of vitamins in vegetable crops).

The composition of «NAGRO» bio-organic fertilizing nano fertilizer: micronutrients, macronutrients, mezo elements, plant hormones, mikrogumaty, fulvic acids, metabolites, amino acids, inorganic silicon compounds, vitamins, bacterial spores, bio solvent and etc.

The use of bio-organic nanoudobreniya «NAGRO» with different methods of cultivation provides high-quality seedlings of cabbage. Field germination of cabbage seed treatment «NAGRO» increased by 18.7%. Growth regulators 13-20% increased leaf area of seedlings of cabbage. On the background of natural growth regulators output standard seedlings increased to 97% while significantly reducing lesion blackleg seedlings (5-7 times) (Table 1).

Table 1 – The influence of “NAGRO» bio-organic fertilizing nano fertilizer usage on productivity of late “Kolobok F1” cabbage cabbage varieties

Option	Productivity (q per 1 h)		Total yield increasing		Cabbage heads density, g/cm3
	overall	goods	c/hejm	%	
Without cultivation					
Growing in a cool nursery (ground) (no picks)	182,0	152,0	-	-	0,58
Growing in boxes (without picking)	193,0	150,5	11	5,6	0,59
Growing in boxes (with sparring)	201,0	158,0	19	9,4	0,58
Growing in cups	213,0	174,0	31	14,5	0,59
Growing in mesh trays	215,0	182,0	33	15,3	0,58
NAGRO» bio-organic fertilizing nano fertilizer cultivation (seedling + seed)					
Growing in a cool nursery (ground) (no picks)	209,0	179,0	27	12,9	0,60
Growing in boxes (without picking)	211,0	185,0	29	13,7	0,62
Growing in boxes (with sparring)	217,0	191,0	35	16,1	0,63
Growing in cups	233,0	203,0	51	21,8	0,61
Growing in mesh trays	242,0	219,5	60	24,7	0,63

Feeding as a way of productive and economical use of fertilizer is widely used in the production. They are the part of cabbage fertilizer system. Furthermore, correcting deficiencies dressings basic fertilizer, particularly when small dosages were made prior to planting. Feeding used root, which is the main reception, and foliar (through leaf).

As can be seen from Table 1, "NAGRO" bio-organic fertilizing nano fertilizer cultivation during the growing season increased the overall productivity by 5,6 – 24,7% and 13 – 20% of commodity. It is noted that the cabbages have higher density while using "NAGRO" bio-organic fertilizing nano fertilizer compared to the control (no treatment).

The chemical composition of cabbage varies depending on growing conditions.

The use of "NAGRO" bio-organic fertilizing nano fertilizer cultivation on white cabbage during the growing season of cabbage on dark chestnut soils of the steppe zone of West Kazakhstan region contributed to the production of good quality products (Table 2).

Table 2 – The influence of "NAGRO" bio-organic fertilizing nano fertilizer usage on productivity of white cabbage cabbage varieties

Options	Dry matter,%	Sugar amount, %	C vitamin, mg/100g	Nitrates, mg/kg
Without cultivation				
Growing in a cool nursery (ground) (no picks)	6,5	3,6	21,4	238
Growing in boxes (without picking)	6,6	3,7	21,6	295
Growing in boxes (with sparring)	6,9	3,7	21,8	298
Growing in cups	7,0	3,5	22,0	276
Growing in mesh trays	7,0	3,2	21,6	266
NAGRO» bio-organic fertilizing nano fertilizer cultivation (seedling + seed)				
Growing in a cool nursery (ground) (no picks)	7,1	3,8	22,0	289
Growing in boxes (without picking)	7,0	4,0	21,8	290
Growing in boxes (with sparring)	7,2	4,1	23,0	295
Growing in cups	7,3	4,1	22,5	300
Growing in mesh trays	7,6	4,2	22,8	297
$НСР_{05}$	0,2	0,10	0,3	21,3

There were no significant differences in dry matter content were observed between experience options. The amount of sugars and vitamin C while using "NAGRO" bio-organic fertilizing nano fertilizer has significant excess relative to a control (no treatment). Nitrate concentrations were below the MRL for cabbage.

Conclusion:

1. Seed treatment by "NAGRO" bio-organic fertilizing nano fertilizer before sowing and spraying cabbage growing plants in the phase of 6-7 true leaves, and twice - after this phase and in the phase of setting mass of heads with operating expense fluid 300 l / ha increased the growth and development of plants late-ripening varieties of cabbage in the steppe zone on dark chestnut soils of the West Kazakhstan region.

2. It was found that in dry conditions on dark chestnut soils of the West Kazakhstan region the "NAGRO" bio-organic fertilizing nano fertilizer using provided a reduction of the vegetation period late-maturing varieties of cabbage "Kolobok F1" by 4-6 days.

3. It was found that cabage yield productivity depend up to "NAGRO" bio-organic fertilizing nano fertilizer using and weather conditions.

4. "NAGRO" bio-organic fertilizing nano fertilizer using during white cabage vegetation period is economical efficient. Profitability level is 96 - 103%.

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ТҮЙІН

Мақалада аққауданды қырыққабаттың көшетін әр түрлі тәсілдермен және тұқымды биоорганикалық «NAGRO» нанотыңайтқышымен себу алдында өңдеу мен үстеп қоректендіру арқылы өсіруінің өнімділігі және өнімнің химиялық сапасының нәтижелері көрсетілген.

РЕЗЮМЕ

В статье изложены результаты исследований выращивания рассады различными способами, также влияние предпосевной обработки семян и подкормки рассады капусты белокочанной биоорганическим наноудобрением «NAGRO» на урожайность и качество продукции.

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КАРТОП СҰРЫПТАРЫНЫҢ ӨНІМДІЛІГІ МЕН САПАСЫНА АЗОТТЫ ТЫҢАЙТҚЫШТАРДЫҢ ӘСЕРІ

Аннотация

Мақалада Орталық Қазақстанның ауыр құмбалшықты күңгірт қара қоңыр топырағында картоп сұрыптарының өнімділігі мен сапасына азотты тыңайтқыштардың әсерін зерттеу мақсатында жүргізілген ғылыми-зерттеу жұмыстарының қорытындылары келтірілген.

Зерттеу жұмыстары картоп сұрыптарының өнімі мен сапасын құруда азотты тыңайтқыштардың тиімділігі мен топырақтағы негізгі қоректік заттар мөлшерлері келтірілген.

***Түйін сөздер**: картоп, сұрыптар, азотты тыңайтқыштар, өнімділік, өнім сапасы, тиімділік.*