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BIOLOGICAL EFFECTIVENESS OF THE HERBICIDE BADOKS 720 WD AGAINST ANNUAL AND PERENNIAL DIETARY WEEDS IN WHEAT FIELDS

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Abstract: The effect of the herbicide BADOKS 720 WD on the growth, development, and yield of cereal plants when used against annual and perennial dicotyledonous weeds was studied.
Keywords: grain, chemical, weed, BADOX 720 WD herbicide , preparation, control.

INTRODUCTION. The role and importance of the agricultural sector in ensuring food security of the population on a global scale is increasing day by day. In particular, in our country, it is urgent to rationally use existing resources and opportunities to provide the population with guaranteed agricultural products, further increase productivity and profitability, and introduce scientific achievements and modern approaches to the sector.

The total wheat production in the world is 772 million tons. The top 10 wheat producing countries are: China, India, Russia, USA, France, Canada, Pakistan, Ukraine, Australia and Germany.

In the last five years in our republic, over 55 t/ha of grain was obtained, and the total amount of the harvest was 6.5-7.8 million tons. Today, more than 75 types of weeds have been identified in the irrigated grain fields of our country. The number of weeds dangerous for agriculture is 209 species, they belong to 59 botanical families. 57% of them are annual and 43% perennial weeds.

The main task in the development of agricultural crops in Uzbekistan is to increase the yield of abundant and high-quality products. Therefore, it is necessary to use the achievements of advanced science and technology on a large scale. As a result, it is important to conduct timely and effective control of weeds in winter wheat and other crops grown by existing dehkan farms in the republic.

Weeds absorb moisture from the soil, some weeds have deep roots and absorb a large amount of water, nutrients, and minerals from the soil compared to cultivated crops. They shade plants, block light, and disrupt the photosynthesis process. They create favorable conditions for the reproduction of pests and diseases (such as achambiti, field mustard, wild radish, and others), and spread fungal diseases. To prevent this, weeds should be removed at an early stage.

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Due to the damage of weeds, the yield of winter wheat is lost by up to 30-50%. In order to clean the fields from weeds, the use of chemicals, i.e. herbicides, along with mechanical and agrotechnical measures, is of great importance. It is advisable to use promising, highly effective, low-dose herbicides produced in our Republic and abroad against annual and perennial weeds found in crops.

In order to increase the yield of winter wheat grain, it is necessary to correctly select varieties and plant selected high-quality seeds, taking into account their biological characteristics, prepare the soil and seeds for sowing, determine the method, norms and timing of sowing, feed with organic and mineral fertilizers, irrigate, combat weeds, diseases and pests, introduce innovative technologies that ensure the efficient use of water and land resources, as well as increase the yield of winter wheat grain.

Weeds such as wild oats and yellow cottongrass, which are widespread in wheat fields, consume 20-30 times more nitrogen than wheat grass. This means that applying mineral fertilizers to a field where weeds have grown is equivalent to wasting their energy on the air.

In world practice, weed control in cultivated fields is carried out mainly in three ways. The first is the so-called biological method, which is not yet very developed. If the scientific basis for the use of biological methods is fully established, it will be possible to destroy wild plants with the help of plants and birds that spread diseases against them.

The second method is agrotechnical measures against weeds. This is also a fairly effective method, but since agrotechnical measures are not always carried out correctly and in a timely manner, there is a risk of weeds multiplying. For example, if the land that has been cleared of crops is plowed deeply in the fall, the weed seeds will fall much lower and their chances of germination will be significantly reduced.

The third most widely used method of controlling weeds today is their chemical destruction. Herbicides are mainly used for this. Herbicides are divided into broad-spectrum and selective groups according to their mechanism of action. Broad-spectrum herbicides destroy both cultivated and weedy plants. This type of herbicide is used on non-agricultural land.

Selective herbicides focus their toxic properties only on weeds and do not harm cultivated crops. If used in the right place and at the right time, even with the help of herbicides, weeds can be completely eliminated [12].

High-quality plowing of the areas where grain crops are planted, timely irrigation, sorting of seeds when planting grain crops, use of effective herbicides when the number of weeds increases sharply is required. Herbs such as perennial dicotyledonous weeds, sedum and black sedum have an effective effect on annual dicotyledonous weeds at the same time. The following preparations are effective when weed seeds germinate and 5-6 true leaves appear [7].

Weeds are plants that are not planted by people, but grow among crops and harm them , and are not suitable for growing in a certain area. Weeds reduce the yield of cultivated plants and cause great damage to agriculture. On a global scale, crop losses due to weeds amount to 20 billion dollars or 14.5% of the total yield, and in Uzbekistan, 15-20 % of the yield of cotton and other crops. Weeds, with their strongly developed root system, use more nutrients and moisture in the soil than cultivated plants , preventing their development and high yield. For example, a well-developed weed can occupy an area of 3-4 m $^{2\ in}$ poor soil. Parasitic weeds (sedge, sedge) are extremely dangerous, taking nutrients directly from the cultivated plant itself and destroying it [8].

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Weeds are difficult to combat because they have a multifaceted biological nature. Therefore, a comprehensive study of their biological characteristics greatly facilitates the application of measures to prevent their spread or eradicate them. One of the biological characteristics of weeds is their high seed production. For example, one bush of wild bulrush produces 500,000 seeds, 150,000 seeds, 200,000 seeds, and 45,000 seeds, some of which produce more than a million seeds, while the number of seeds of most cultivated plants does not exceed 200-300 (Table 7). Weed seeds retain their germination capacity for a long time. According to experimental data, the seeds of linden retained their germination capacity of 6-18.2 % after 40 years, and those of button after 57 years, while the seeds of dogwood did not lose their germination in cold weather of -29 °C , and those of yarrow in hot water of +85-95 °C. This can be explained by the fact that their seeds are covered with a special shell that is impermeable to water and air [9].

A system of measures to combat weeds growing on it is developed for each field. The selected method takes into account agrotechnical and chemical measures, as well as the purity of seed materials and quarantine measures. One of the important agrotechnical measures is plowing the land with double-row plows to a depth of 30 - 40 centimeters. Deep tillage of the land prevents the germination of weed seeds and rhizome fragments by burying them deep. To reduce weed weeds in the field, the soil is loosened using mounted and trailed plows without a tiller, and the rhizomes (cane, sedge, ajriq, etc.) are combed out with chisels or cultivators, as well as toothed harrows, collected and destroyed. In early spring, weed weeds are destroyed by harrowing the grass. During the growing season of crops, weed weeds are mowed. Selective herbicides are used in the method of chemical control against one, two and perennial weeds [10].

Experiment method and materials. The biological effectiveness of the experiments conducted on the herbicide BADOKS 720 WD was carried out according to "Metodicheskim ukazaniyam po Gosudarstvennim ispitaniyam gerbisidov na posevax sel'skohozyaystvennih kul'tur", Tashkent, (2007) and "Metodicheskim ukazaniyam po obshim voprosam opitnogo dela", productivity was carried out by the method of B.A. Dospehova (1995).

Table 1

Major weeds encountered in experimental plots

Weed names	**Reckoning time**	**The number of weeds per 1 sq.m**
Amaranthus retroflexus.	March 7 2024 year.	4.2
Ekma mustard - *Fagopyrum esculentum Moench*		5.1
Euphorbia falcata *L.*		5.5
Average star fire – *Stellaria media (L) Will*		4.6
Boichan kurttana, voshvosha - *Sisymbrium altissimum* L.		4.8
Common horsetail - *Rumex confertus Willd.*		4.8
Black-leaved ivy - *Convolvulus pilosellifolius Desr.*		4, 9

Amaranthus retroflexus **is an annual wild grass.** It has a creeping rhizome, the height of the grass is 20-80 cm. Its seeds germinate well at a depth of 2-3 cm. The seeds begin to germinate at a temperature of 6-80 ° C , the optimal temperature is 26-300 ° C. Up to 1 million seeds are

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produced in one plant. The seeds that have overwintered germinate and develop. This time falls on June and July.

Buckwheat - *Fagopyrum esculentum Moench.* An annual weed. The stem is solitary, smooth, 30-80 cm tall, 2-4 mm thick, usually located in the axils of the leaves on short stalks. The leaves are cordate, rounded or the lower leaflets are pointed, glabrous. It blooms in May. It grows among irrigated crops. It is widely found in the Samarkand, Tashkent, Bukhara, Kashkadarya and Jizzakh regions of our republic.

Euphorbia falcata L. is an annual weed. The **stem** is erect, leafy, branched from below, 5-30 cm tall, with numerous, alternate leaves, oblong, lanceolate, with a pointed tip. The inflorescence is umbellate, 3-5 stellate. The stamens are wide, ovoid, trilobed. The seeds are ovoid, oblong, quadrangular, brown, 1-2 mm long. It retains its germination in the soil for more than 5 years. It blooms and sets seeds from March to September.

Stellaria *media (L) Vill. is an* **annual** weed with a thin stem and white star-shaped flowers, 10-25 cm tall. The leaves are opposite, ovate, with short tips. One plant produces up to 25,000 seeds. Its viability remains for 2-3 years. It flowers and seeds from March to June. It grows among irrigated crops and wheat fields.

Tall wormwood, sisymbrium *altissimum L.* is a one- or two-year-old weed, with a mostly erect stem, covered with stiff hairs, simple or branched, 20-100 cm tall. The leaves are long-lobed, lyre-shaped, the last part is three-lobed, the edge is serrate. The inflorescences are long-nailed, yellow, the stamens are hairless, pen-shaped, 25-45 mm long, bent upwards. It blooms and seeds in April-June. It grows on roadsides and among crops.

Common sorrel - *Rumex confertus Willd.* is a perennial weed with an erect, branched stem, 85-120 cm tall and 10 cm thick. The root is thick and branched. It blooms and seeds in May-June. It grows among crops. It is abundant in the Tashkent and Kashkadarya regions of our republic.

Convolvulus pilosellifolius Desr. is a perennial **weed** , usually slightly ascending, branched from the base, 30-70 cm tall. The leaves are compressed, the lower part is lanceolate, narrowing towards the base. The flowers are located 2-4 at the ends of short branches. The bracts are hairless, oblong, 4-5 mm long. One plant produces about 200 to 5,000 thousand seeds. It retains its fertility for more than 6 years. It blooms and sets seeds from June to August. It is widely found among irrigated crops.

The results of the experiment. The main purpose of herbicide application is to eliminate weeds without adversely affecting plant growth and development (Table 2).

According to the results of the observation, when using the herbicide BADOKS 720 WD at a rate of 30 l/ha against annual grass weeds found in winter wheat, after 15 days the number of plants per 1 sq.m. ^{area} was 0.6-0.7, and the biological efficiency was 86.8-87.5%. After 30 days, the biological efficiency was 87.3-87.6%, respectively, and by 60 days it was 87.6-88.1%.

Yield was higher when BADOKS 720 WD was applied at a rate of 30 l/ha, with an additional yield of 14.4 c/ha compared to the control and 2.4 c/ha compared to the reference.

Conclusions. 1. When using BADOKS 720 WD - 30 l/ha against annual dicotyledonous weeds found in wheat fields, the biological effectiveness was 87.4-87.6%, calculated on average.

2. An additional 14.4 t/ha compared to the control and an additional 2.4 t/ha were obtained due to the reduction of weeds and the expansion of the food area.

Table 2

Biological efficacy of the herbicide BADOKS 720 WD against annual cereal weeds

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(under conditions of Tashkent region, 2024)

Weed names	1 sq.m	Control - without herbicide, 1 sq.m	ZARASTAR PLUS 75% – 30 g / ha (template)		BADOX 720 WD – 30 g / ha	
			pcs/m2	%	pcs/m2	%
After 15 days						
Council	4.2	5.64	0.7	87, 6	0.71	87.4
Ekma mustard	5.1	5.48	0.74	86.5	0.72	86.8
Sutlama	5.5	5.32	0.68	87.2	0.69	87.0
Average star fire	4.6	5.46	0.78	85.7	0.72	86.8
Boichan kurttana, voshvosha	4.8	5.48	0.81	85.2	0.69	87.4
Common horsetail	4.8	5.61	0.79	85.9	0.7	87.5
Black-leaved ivy	4.9	5.51	0.82	85.1	0.7	87.3
Average	4.84	5.50	0.76	86.1 2	0.70	87, 2
After 30 days						
Council	4.1	5.59	0.7	87, 5	0.69	87.6
Ekma mustard	5.2	5.45	0.69	87.3	0.69	87.3
Sutlama	5.3	5.48	0.71	87.0	0.68	87, 6
Average star fire	4.4	5.57	0.72	87.1	0.7	87.4
Boichan kurttana, voshvosha	4.5	5.51	0.7	87.3	0.69	87, 5
Common horsetail	4.6	5.44	0.69	87.3	0.67	87, 7
Black-leaved ivy	4.7	5.43	0.7	87.1	0.68	87, 5
Average	4.69	5.50	0.70	87.2	0.69	87.5
After 60 days						
Council	4.3	5.49	0.7	87, 3	0.67	87.8
Ekma mustard	5	5.41	0.69	87, 3	0.66	87.8
Sutlama	5.3	5.44	0.72	86.7	0.67	87.7
Average star fire	4.5	5.47	0.71	87.0	0.65	88.1
Boichan kurttana, voshvosha	4.6	5.55	0.73	86.8	0.66	88.1
Common horsetail	4.7	5.43	0.75	86, 2	0.67	87.7
Black-leaved ivy	4.7	5.45	0.74	86.4	0.67	87.7
Average	4.73	5.46	0.72	86.8	0.66	87.8
Average 3 scores	4.75	5.49	0.73	86.7	0.68	87.5

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Table 3
The effect of BADOKS 720 WD on winter wheat yield

Options	Productivity, ts / ha	Additional yield, ts / ha
Control – no herbicide	1 8.3	-
ZARASTAR PLUS 75% – 30 g/ha (sample)	3 0.3	1 2
BADOX 720 WD – 30 g/ha	3 2 , 7	1 4 ,4

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