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Pesticides' Influence On Winter Wheat Growth, Development And Yield

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Abstract – This article presents data from studies on winter wheat crops against weeds and diseases with the integrated use of herbicides, fungicides and the biologically active substance "Humimax double strength". As a research result, it was revealed that the positive effect of herbicides, fungicides and biologically active substance "Humimax double strength" on assimilation surfaces, wheat yield. The highest assimilation surface and grain yield of winter wheat is formed with the integrated application of herbicides Entostar 75%, Ovsyugen extra, from Torso fungicides and the biologically active substance "Humimax double strength".

Keywords – ***Weeds, rust, productivity, grain, fungicide, herbicide, winter wheat, biologically active substances.***

I. RELEVANCE

Weeds and diseases significantly reduce the resistance to lodging are sources of powdery mildew, rust and other diseases, as well as pests of winter scoop, aphids, thrips, harmful turtle, wheat yield and grain quality. At the same time, weeds significantly reduce soil fertility, absorb light, moisture and nutrients, and create an obstacle to harvesting. As a result, due to a decrease in the photosynthesis productivity, the organic matter reserves in wheat biomass are reduced.

In the spring, in the winter wheat fields, in the midst of the herbicides, fungicides, insecticides, suspensions, biologically active substances use and mineral fertilizers due to the "technological track" absence on crops, when processing crops, the tractors and aggregates passage across the field is 7-8 times. At the same time, lodging and damage to plants is largely observed, the fuel and lubricants consumption increases the cost.

Therefore, one of the main tasks in growing winter wheat is to study the integrated use effectiveness of herbicides, fungicides, biologically active substances. At the same time, important attention should be paid to the optimal options development for improving the phytosanitary conditions for resource conservation in the winter wheat fields, reducing the wheat fields lodging.

The winter wheat leaf surface varies depending on the soil and climatic conditions and the biological characteristics of the variety and the agricultural technology used. In dry years, on winter wheat crops, the leaf surface ranges from 5-20 thousand m2/ha,

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and with sufficient moisture and nitrogen nutrition, it increases to more than 70 thousand m2/ha. With 4-5 m2/m2 ha leaf index for sowing, the photosynthesis system works in an optimal mode and a lot of PAR (photosynthetic active radiation) is absorbed. If the leaf blade is small, then the PAR absorption is also reduced. When the leaf surface is more than 50 thousand m2/ha, the leaves on the bottom remain in the shade and their participation in photosynthesis decreases, as a result of which the upper leaves have to "feed" the leaves below. [4]

The yield formation depends not only on the leaves area, but also on their functioning time. The main indicator that determines the winter wheat yield is the photosynthetic potential. Photosynthetic potential (FP) can be determined for ten-day, interphase periods, or for the plants growing season.

Many studies [3] have revealed that on irrigated lands, the photosynthetic potential of winter wheat in Uzbekistan is 3-4 million m2/ha in x days.

A large amount of winter wheat leaf surface is observed in the earing, flowering phase at milky ripeness of grain.

Dry organic matter accumulated in plants is 95% photosynthesis products, and the minerals share from plant roots is 5-10%. [1]

II. Research methodology

Field research was carried out in 2011-2013 at the "Shodmonboy Negmatov Sokhibkor" farm in Taylak district of Samarkand region. For the experiment, we selected a winter wheat field with heavily weedy single and dicotyledonous weeds. Permanent sowing of winter wheat in the field has been carried out for 5 consecutive years.

The soils on the site are meadow-gray earth, the groundwater depth is 3-4 meters. The area of each accounting plot is 100 m2. The experiment was carried out in four replicates. The study object was Krasnodar-99 winter wheat variety. The mineral fertilizers rate was N180P90K60 kg/ha. In the experiment, soil moisture was maintained during the plants growing season at least 70% of the ППВ.

III. The aim of the research

Was to study the pesticides effect on the growth, winter wheat development and yield, optimize their use and introduce the best options into production.

IV. Research results

On the experimental field, the winter wheat crops during irrigation are heavily contaminated with cereal weeds - southern wild oats, ryegrass, foxtail, wild barley. From the dicotyledonous weeds, the stellate, white gauze, whiteweed, rape, field bindweed, nightshade and others are widespread. With the appearance of signs of yellow and brown rust, herbicides, fungicides and the biologically active substance "Humimax double strength" were used in a complex.

On the control plots, herbicides, fungicides, biologically active substances were not used, in the stemming phase, in winter wheat, the leaf index in the control variant was 2.55 m2/m2. On plots using the herbicide Entostar 75%, the leaf area increased to 4.41 m2/m2. When the herbicide Ovsyugen extra was applied, the leaf surface increased by 1.99 m2/ m2 in comparison with the control variant. With the combined application of the herbicides Entostar 75% and Ovsyugen extra, the leaf index was 4.66, and with the application of the fungicide Torso - 3.83 m2/ m2 ha. On the variant with the use of herbicides Entostar 75%, Ovsyugen extra, fungicide Torso-4.84 m2/m2 in the complex. When the herbicides Entostar 75%, Ovsyugen extra, the fungicide Torso and

the biologically active substance "Humimax active strength" were applied together, the leaf index was the highest at 4.98 m2/ m2 ha.

Dynamics of the winter wheat leaf index depending on the herbicides, fungicides and biologically active substances use, m^2/m^2, (2011-2013)

№	Experiment options	Plant development phases				Average for the growing season m^2/m^2	Productivity, c/ha
		exit in pipe	earing	blooming	wax ripeness		
1	Control (without herbicides, fungicides, biologically active substances)	2,55	3,48	3,75	3,54	3,33	46,5
2	Entostar 75%	4,41	4,54	4,75	4,64	4,59	56,2
3	Ovsyugen extra	4,54	4,73	4,86	4,66	4,70	58,0
4	Entostar 75% + Ovsugen extra	4,66	4,82	4,95	4,78	4,80	63,1
5	Torso	3,83	4,15	3,96	4,17	4,03	56,4
6	Entostar 75% + Ovsyugen extra + Torso	4,84	4,94	5,21	4,96	4,98	70,1
7	Humimax	3,98	3,88	4,07	3,95	3,97	54,2
8	Entostar 75%+ Ovsyugen extra+ Gumimax double strength	4,98	5,11	5,24	5,07	5,10	78,1

During the plants growing season, from the tube emergence to the flowering phase, the winter wheat leaf surface increased in all variants, with the transition to the waxy ripeness phase of grain, a decrease in the assimilation surface was observed. The reason for this is that when the grain is waxy, the lower leaves of winter wheat turn yellow, dry out and do not participate in the photosynthesis process. [2,4]

As a result of the herbicides and fungicides use on crops, the weeds death was observed up to 90%, winter wheat was not affected by fungal diseases. At the same time, the winter wheat growth and development increased, the leaf index increased. On the control plot (without herbicides, fungicides, biologically active substances), the yield was 46.5 c/ha. When the herbicide Entostar 75% was applied, the yield was 56.2 c/ha, Ovsyugen extra 58.0 c/ha, Entostar 75% + Ovsyugen extra 63.1 c/ha.

The biologically active substance use "Gumimax double strength", the yield increase in comparison with the control variant was 7.7 c/ha. The highest yield, in comparison with other options, was established with the use of herbicides Entostar 75%, Ovsyugen extra, fungicide Torso with a biologically active substance "Humimax double strength" - 78.1 c/ha.

V. CONCLUSIONS

The combined herbicides, fungicides and biologically active substances use improves the phytosanitary crops state, increases the leaf index, yield, reduces fuel costs and plant damage when processing winter wheat crops.

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