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IMPACT OF CROP PROTECTION FROM THE DYNAMICS WEEDS ZABURYANENNYA INCREASE IN SOYBEAN LEAF SURFACE AND ITS PERFORMANCE

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The article shows that the growth of leaf surface and absolutely dry weight of soybean plants depends on growing conditions, but primarily - on the level of weed-infested crop and highly efficient use of herbicides in the care of the culture. Through the use of herbicides and tank mixtures Pivot Galaxy topu of poastom, leading to the reduction of weed-infested crops, there is an increase in foliage 1,5-2,1 times more compared to the control variant. Destroying weeds and improve the growing conditions of Culture accompanied by productivity growth and increase dry weight. The maximum rate of photosynthesis in soybean growing season is in the range of hilkuvannya to bloom. In version control without herbicides from hilkuvannya to flowering intensity of photosynthesis was at 5.2 g / m2 leaf area per day, while the version with Pivot - 6.9 and with the use of the Galaxy topu poastom - 6.3 g / m2 per day 33 and 21% higher than the rate in the control variant respectively.

Soy, herbicides, leaf surface, the intensity of photosynthesis performance, weeds

In many countries, the problem of protein for human nutrition and fodder solved by soybeans, through the development of new production technologies, new high-yielding varieties, using soy flour, soy protein isolates and concentrates [1]. Harmfulness of weeds, particularly perennial, is the main cause of getting low harvest soybeans in all areas of its cultivation [2]. The negative relationship between the number of weeds in crops and reduced productivity culture is evident [3, 4]. Economic threshold of harmfulness, in which soybean yield decreased by 10%, when considered weediness 1 m^2 sowing has 5 monocots or 3 flowering weeds. In zabur'yanenyh field crops decreased germination of crops, delayed growth and development [5, 6]. Weeds in soybean crops on 22-50% decrease hilkuvannya at 29-50% - the number of beans to 20-44% - photosynthetic apparatus in 1,5-2 times - brought nutrients [7- 9].

Terms of soybean, in particular, the mineral nutrition, moisture and light, affect its growth and development and the formation surface photosynthetic plants. The presence of weeds in crops which are strong competitors on the main factors of life determines the level of growth leaf surface and its activity during the growing season [7-9]. Therefore, a study of the impact of crop protection from soybean zabur'yanennya the dynamic growth of leaf area culture and its performance are relevant and necessary.

Methods of research

Research to determine the efficiency of complex use of herbicides to soybean crops weeds stationary rotation was carried out in the department of chemical plant protection Agronomy Research Station National Agricultural University, located in the village of Wheat, Kyiv region for 1999-2013 years. Soil test sites of NAU Ahrostantsiyi refers to the high content of humus black earth typical rough silty medium suhlynkovoho by particle size, containing 20-25% clay particles. Soil cancellation - typical of the steppe zone. Black soil with high natural fertility and are characterized by a high content of total and mobile forms of nutrients. In particular, the 0-20 cm soil layer contains from 0.27 to 0.31% total nitrogen, from 0.15 to 0.25% - total phosphorus and 2.3 to 2.5% - potassium. The content of mobile phosphorus (for Machyhinym) is 3,3-3,4 mg, and rolling potassium - 9,8-10,3 mg per 100 g soil. The average air temperature in the growing season at the experimental site was within April (10-12 ° C); May (12,2-14,2 ° C); June (16,8-21,2 ° C); July (18,6-23,7 ° C); August (18,9-20,2 ° C); September (13,4-14,1 ° C). The predecessor of soybean was winter wheat. After cleaning predecessor spent peeling stubble disc plows to a depth of 8-10 cm or heavy disk harrow - 10-12 cm. After 2-3 weeks after many years of regrowth and sprouting malorichnyh weed species in wheat and windfall sites of spent processing herbicides (Roundup and lontrelom). Autumn plowing to 23-25 cm performed in October. In field experiments dribnodilyanochnyh fertilizer did not make.

Pre-tillage consisted of early spring plowing and harrowing presowing cultivation with harrowing 6-8 cm. Soybean seeding was performed in optimal

timing for this area drills usual way ordinary CH-16 or OT-3.6 when warm soil to a depth of 10 cm reached 10-12 ° C were seeded soybean varieties Chernyatka and Kiev 27 bred in the Institute of Agriculture UAAS. By way of continuous seeding seeding rate was 500-650 thousand seeds per 1 ha. Care culture system consisted of one doshodovoho and one or two pislyashodovyh harrowing and entering groundwater or insurance herbicides. The harrowing average harrows performed or rayborinkamy angle or perpendicular to the direction of sowing. Control variant were areas in which were all weeds in crops vehetuvaly.

Pislyashodovi herbicides made in the first phase of 1-3 leaves in soybean trigeminal knapsack sprayer "Phlox 10" or "Era 1" with the flow of working liquid 250-300 l / ha, and in terms of their production through used tractor sprayers bull OP -2000-01 or "hardy" with the flow of the mixture 200-300 l / ha.

The harvest of soybeans were harvested by direct threshing combine culture "Sampo", "Don-1500" or SK-5 "Niva" removed from the supporting runners. Accounting yield was performed by continuous thrashing culture and accounting areas simultaneously test method sheaves with conversion value of the harvest per 1 hectare.

Scheme field experiments:

Autumn application of herbicides. - Factor A.

1. Control without herbicides;

2. Roundup, 36% VR - 4 l / ha;

3. Lontrel, 30% of VR - 0.5 l / ha

Spring-summer pislyashodovyh use of herbicides. - Factor B.

1. Control without herbicides;

2. Pivot, 10% v.r.k. - 0,75 l / ha;

3. Galaxy-top, 47.1% v.r.k. - 2 l / ha + Poast, 20% KE - 2 l / ha.

The effectiveness of interventions determined by calculation and accounting results compared to a control option, which did not make herbicides. For standard adopted variants in which pivot contributed 10% v.r.k.- recommended and widely known herbicide. Overall dimensions sites in experiments with herbicides were

within 28-38 m2, accounting areas - within 24-32 m2, three single repetition and consistent deployment options. Counts of weed-infested performed two times during the growing season by techniques VIZR, Ya.Yu. Staroselskoho, Price, SO Triebel [10-13]. First (quantitative) definition of accounting weed species composition was performed in the phase of budding soybean, and the second - in the phase of ripening beans quantitative and weight method, and the application of herbicides in autumn - census conducted in 20-25 days and the pre-cultivation. Plant stand density was determined by counting the number of permanently fixed platforms measuring 1 m2 in phase full of stairs and before building the culture of stand density conversion of soybean plants per 1 hectare.

Square leaf surface was determined by culture "vysichok" [14], the accumulation of absolutely dry weight of plants - thermostat-gravimetric method [15], and the dynamics of net photosynthetic productivity of soybean plants - on how AA Nychyporovycha [16].

Results and Discussion

Soy excessively suppressed weeds, which has hampered the growth of foliage, beginning with phase hilkuvannya (Table. 1). Thanks to a system of care for crops Pivot highly efficient herbicides and tank mixtures with Galaxy topu poastom and, through these measures, reducing the level of weed-infested crop foliage there is an increase in 1,5-2,1 times in comparison with the control variant (Fig. 1).

1. Impact of herbicides on the growth dynamics of soybean leaf area (average of three years, th. M^2 / ha)

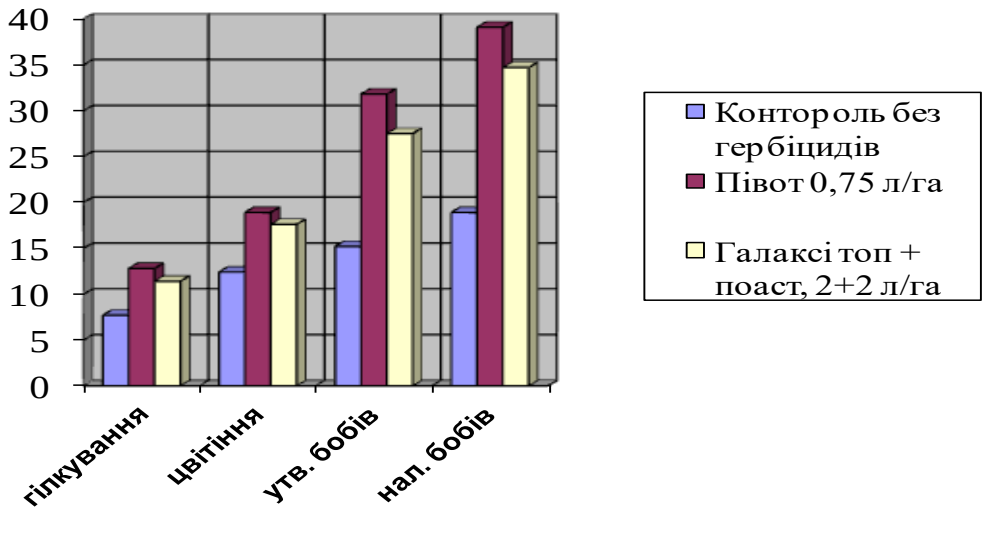
Options	Rate of kg, liters / ha	Phase of culture			
		hilkuvannya	bloom	formation beans	poured beans
Control without herbicides	-	6,8 100*	11,5 100	14,7 100	17,6 100
Pivot	0,75	10,5 154	19,7 171	28,9 196	37,5 213
Galaxy top + poast	2,0 + 2,0	10,2 150	18,8 163	26,4 180	35,6 202

* The denominator submitted to% control without herbicides.

It should be noted that suppression of weed culture and formation observed foliage throughout the growing season, but it is most noticeable as the growth and development of most weeds and reaches a maximum in the phase of ripening beans.

The intensity of photosynthesis depends on the biological characteristics of the plants and the range of external factors: intensity of solar radiation, air temperature, the presence in it of carbon dioxide, the level of mineral nutrition, the presence of weeds like. From the data in Table 2 shows that the net productivity of photosynthesis of soybean also depends on the phase of culture. During the period from germination to hilkuvannya net photosynthetic productivity of soybean plants was almost on a par 1,7-1,8 g / m2 per day, regardless of weed-infested crops and herbicides used. This is explained in competition aggravation weed interference and culture, beginning etiolyatsiyi latest and enhanced its growth.

The maximum rate of photosynthesis in soybean growing season is in the range of hilkuvannya to blossom, even when in control without herbicides, it was at 5.2 g / m2 leaf area per day, in the version of Pivot - 6.9 and with the use of the Galaxy topu poastom - 6.3 g / m2 on day 33 and 21% higher than the rate in the control variant respectively.



Options	Rate of kg, liters / ha	Phase of culture		
		stairs - hilkuvannya	hilkuvannya - flowering	blossoms - poured beans
Control without herbicides	-	1,7 100*	5,2 100	2,1 100
Pivot	0,75	1,8 106	6,9 133	3,8 181
Galaxy top + poast	2,0 + 2,0	1,7 100	6,3 121	2,7 128

* The denominator submitted to% control without herbicides.

The value of soybean grain harvest in experiments depended on the state of development of culture and accumulation of absolutely dry mass of cultivated plants and, consequently, the level of weed-infested crop and herbicide efficiency to reduce the number of weeds. Thus, in the variant without the use of herbicides since the formation hilkuvannya beans perfectly dry weight of plants doubled and reached 15.2 kg / ha, while in variants of herbicides it increased in 2,5-2,4 times and reached 31 8 and 27.5 kg / ha, respectively (Table. 3).

3. Increase absolutely dry weight of soybean plants under the use of herbicides (average of two years of research, kg / ha)

options	Rate of kg, liters / ha	Phase of culture			
		hilkuvannya	bloom	formation beans	poured beans
Control without herbicides	-	7,7 100*	12,4 100	15,2 100	18,9 100
Pivot	0,75	12,8 166	18,9 152	31,8 209	39,1 207
Galaxy top + poast	2,0 + 2,0	11,4 148	17,6 142	27,5 181	34,7 184

* The denominator submitted to% control without herbicides.

When using tank mixtures with Galaxy topu poastom (2.0 + 2.0 l / ha) increase quite dry weight was less as in this embodiment weediness was slightly higher than the pivot spraying.

CONCLUSIONS

The increase in leaf area and dry weight of plants is absolutely dependent on growing conditions, but primarily - on the level of weed-infested crop and highly efficient use of herbicides in the care of the culture. Thanks to the system of care of crops and herbicides Pivot tank mixtures with Galaxy topu poastom, leading to the reduction of weed-infested crops, there is an increase in foliage 1,5-2,1 times more compared to the control variant.

Grain crops productivity is about half of the savings are absolutely dry aboveground mass of plants. Destroying weeds and improve the growing conditions of Culture accompanied by productivity growth and increase dry weight. In the version without the use of herbicides since the formation hilkuvannya beans perfectly dry weight of plants doubled and reached 15.2 kg / ha, while in variants of herbicides it increased in 2,5-2,4 times and reached 31.8 and 27.5 c / ha, respectively.

The maximum rate of photosynthesis in soybean growing season is in the range of hilkuvannya to bloom. In version control without herbicides from hilkuvannya to flowering intensity of photosynthesis was at 5.2 g / m2 leaf area per day, while the version with Pivot - 6.9 and with the use of the Galaxy topu poastom - 6.3 g / m2 per day 33 and 21% higher than the rate in the control variant respectively.

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