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TANCHYK S.P., Doctor of Agricultural Sciences
SALNIKOV S.M., a graduate student
National University of Life and Environmental Sciences
e-mail: Salnikovsm@ukr.net

REMOVAL NUTRIENTS WEEDS FROM THE SOIL IN AGROPHYTOCENOSES SUGAR BEET

The paper highlights the main results of the study on the number of batteries made by major weeds that have emerged in agrophytocenoses sugar beet depending on farming systems, in terms of Right-Bank Ukraine steppe, and the resulting shortage of sugar beet root crop harvest.
Keywords: *nutrients, beet, weediness, agrophytocenoses*

Introduction. Segetal plants are full components agrophytocenoses they affect the growth and development of plants, making them compete for the main factors of life. In conditions of severe competition crops is unable to realize their powerful potential biological and generate a high yield. With the lack of protection of crops from weeds decrease crop productivity continuous seeding method can achieve 20-50 %, and row-crop planting – 40–80 % of the possible level [2].

One reason for the decline in crop yields is the harmfulness of weeds, which is caused by the removal of them from the soil nutrients needed for crops. Summary of experimental data shows that the overground mass of weeds found from 1,80–2,16% nitrogen 0,50–1,19 % phosphorus and 2,06–4,67% kalium [1, 4, 5].

The aim - to identify the main takeaway nutrients dominant weeds growing in agrocenoses sugar beet. Calculate crop shortage of sugar beet depending on weediness.

Materials and methods. Experimental studies were carried out in a stationary experiment NUBiP of Ukraine "Agronomic Research Station (p. Wheat Kyiv region) and in the scientific laboratories of the Department of Agriculture and herbology for 2011-2013.

The scheme of crop rotation in field-cultivated grain rotation corresponds to zonal forest-steppe conditions: alfalfa, winter wheat, sugar beet, corn for silage, winter wheat-maize-pea-winter wheat-sugar beet-barley sowing of alfalfa.

Graduation of the first factor - the farming system , composed on the basis of their resource provision for restoring soil fertility :

industrial (control) - the preferred use of agrochemicals industry for restoring soil fertility with the introduction of per hectare crop rotation area 12 tons of manure, 300 kg NPK fertilizers, intensive protection of crops from pests;

ecological - priority use for restoring soil fertility of organic fertilizers with the introduction of crop rotation area per hectare to 24 tonnes of organic (manure 12 tons , 6 tons of non-tradables parts yield , 6 tons of green manure nutrient weight) and 150 kg NPK fertilizers , the use of chemicals on the criterion of eco- economic threshold of harmful organisms;

Biological - use only natural resources: 24 t/ha of organic matter for soil fertility without making industrial agricultural chemicals , the use of complex biological product for seed treatment , biological crop protection tools .

Graduation second factor of primary tillage :

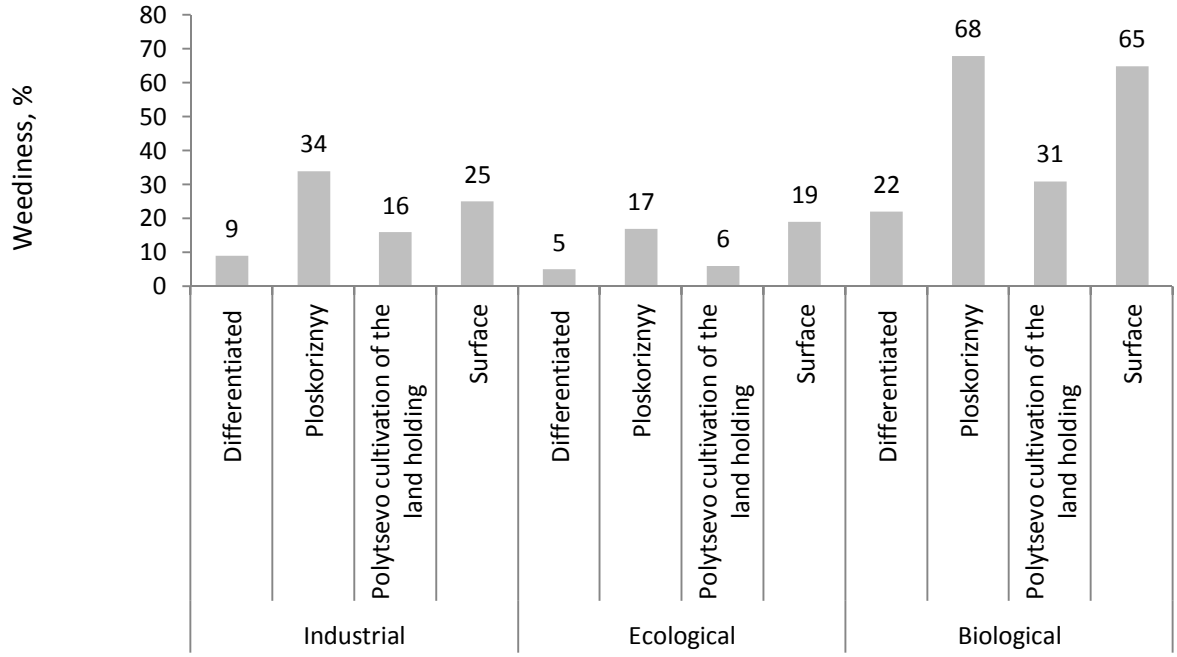
1) differentiated (control): wire for rotation rotation 6x riznohlybynnoyi plowing, 2 single surface under cultivation of winter wheat after peas and corn silage and 1 single ploskoriznoho cultivation during barley ;

2) ploskoriznyy : riznohlybynne soil loosening flat rotation under all crops except the surface under cultivation of winter wheat in the fields listed in the control ;

3) polytsevo cultivation of the land holding : conduct by rotation rotation 2 single plowing under sugar beet , surface cultivation under winter wheat in the fields listed in the control and ploskoriznoho loosening under other crops;

4) Surface : holding disk tillage implements a depth of 8-10 cm for all crops rotation.

Results and discussion. Analysis of weediness agrophytocenoses beet depending on farming systems and tillage (Fig. 1) showed that ecological farming system was the lowest number of weeds compared to other monitored systems.



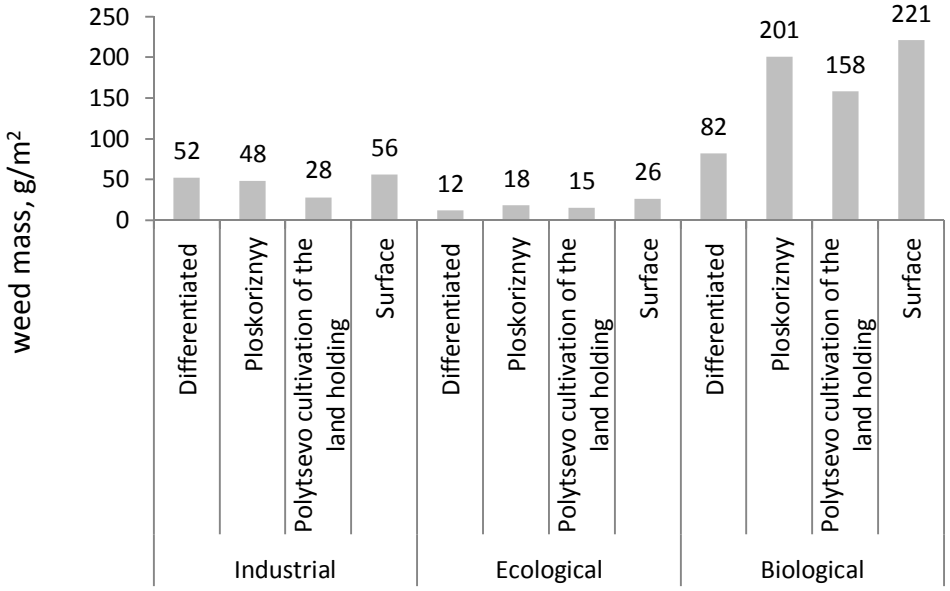
$LSD_{05}A = 0,94$ items/m^2 ; $LSD_{05}B = 1,08$ items/m^2

Figure 1. The impact of farming systems and tillage on weediness beet sugar before building, average 2012–2013 biennium

Weediness by the ecological system decreased by 52 %, and for biological increased by 124 % compared to control (industrial farming system). When using polytsevyh tillage observed reduced number segetal vegetation in crops of sugar beet.

Before collecting records was conducted quantitative gravimetric method , which involves determining the mass of weedy group (Figure 2).

The highest weight of weeds was observed by using biological farming systems that directly proportional due to the large number of them. The lowest mass observed for the use of ecological farming systems - 12–26 g/m^2, depending on the system of primary tillage.



LSD_{05} = 4,1 g/m^2; LSD_{05} = 4,7 g/m^2, LSD_{05} =8,1 g/m^2

Figure 2 . The impact of farming systems and tillage on weed mass in the field of sugar beets before building the culture medium 2011-2012

The highest weight of weeds was observed by using biological farming systems that directly proportional due to the large number of them. The lowest mass observed for the use of ecological farming systems - 12–26 g/m^2, depending on the system of primary tillage.

Weedy species composition of groups is also important as the need for batteries for each species is different. It was therefore taken into account prevailing weed species at the end of the growing season, and held agrochemical research to determine the content of batteries in them (Figure 3) predominant in agrophytocenoses sugar beets were one-and dicotyledonous spring for all farming systems. The largest number of all farming systems Earn mouse bluish (*Setaria glauca*) 48-65% and white quinoa (*Chenopodium album*) 13-29%.

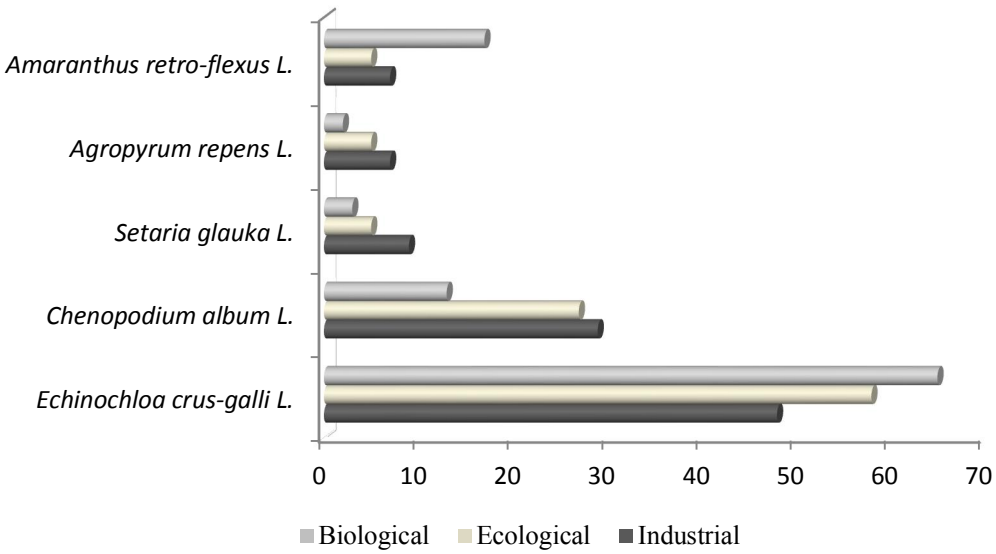


Figure 3. Weedy species range agrocenosis in crops of sugar beet, % of the total, average 2012–2013

With agrochemical analyzes to determine the content of batteries in overground part above listed weeds (Table 1).

These research groups of scientists show that the most common types of weeds in overground mass containing from 2,32 to 3,25 % nitrogen, phosphorus and 0,32–0,8 %, kalium 2,3–3,9 %, average 2012-2013 .

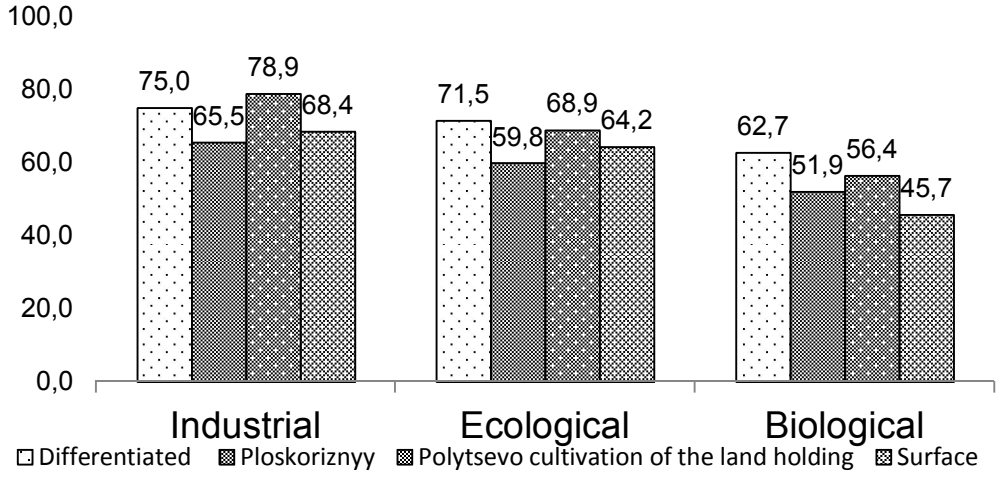
Table 1

The chemical composition of the aerial parts of weed % by weight of dry matter, mean years 2012-2013

Types of weeds	nitrogen			phosphorus			kalium		
	2012	2013	the average value	2012	2013	the average value	2012	2013	the average value
Echinochloa crus-galli L.	3,21	3,09	3,15	0,38	0,42	0,4	3,5	4,3	3,9
Chenopodium album	3,29	3,21	3,25	0,58	0,78	0,68	3,6	3,8	3,7
Setaria glauka L.	2,46	2,22	2,34	0,46	0,58	0,52	3,15	3,25	3,2
Agropyrum repens L.	2,4	2,24	2,32	0,3	0,34	0,32	2,12	2,48	2,3
Amaranthus retroflexus L.	3,08	3,24	3,16	0,75	0,85	0,8	3,42	3,78	3,6

Analysis of keeping weeds showed that the average years of research at the end of the growing season the number of weeds in crops crop rotation was within 4-64 items/m^2. At the time of harvest the weeds with so many formed 1,2-22,1 kg/ha of crude vegetative mass, depending on the choices of research. After analyzing the data on the chemical composition of weeds and received total mass removal of nutrients (Table 2).

The greatest loss of power range injurious elements agrocenoses observed by using biological farming systems. For this system there are no effective methods to control the number of weeds. According to some scholars the cost of batteries for the formation of 1 ton main and by-products are: nitrogen – 5,0 kg phosphorus – 1,3 kg and 5,0 kg of kalium. By comparing the data with previously mentioned numbers, you can calculate the shortfall harvest of sugar beet, which is for industrial systems - 1,9–3,3 t/ha, environmental - 0,7–1,1 t/ha, biological – 6,4–10,3 t/ha. Relative to control (industrial farming system), a decrease of yield 4,5–9,2 t/ha (Figure 4).



$LSD_{05}A$ = 2,81 t/ha $LSD_{05}B$ = 3,25 t/ha $LSD_{05}AB$ = 5,63 t/ha

Fig. 4 Yields of sugar beet farming systems, the average value 2012–2013 yrs.

Table 2

Removal of nutrients aerial parts of weeds depending on the causal factors in kg/ha, the average value 2012–2013

Farming systems	Tillage systems	Removal nutrients			On average of farming systems			Deviations from the control, +/-		
		nitrogen	phosphorus	kalium	nitrogen	phosphorus	kalium	nitrogen	phosphorus	kalium
industrial (control)	Differentiated	15,9	2,7	19,0	14,0	2,5	16,7	0,0	0,0	0,0
	Ploskoriznyy	14,6	3,1	17,0						
	Polytsevo cultivation of the land holding	8,5	1,4	10,2						
	Surface	17,1	2,9	20,4						
ecological	Differentiated	3,7	0,6	4,5	5,5	0,9	6,6	+8,5	+1,6	+10,1
	Ploskoriznyy	5,6	0,9	6,7						
	Polytsevo cultivation of the land holding	4,6	0,7	5,6						
	Surface	8,0	1,3	9,7						
biological	Differentiated	25,6	4,2	30,9	51,7	8,4	62,4	–37,7	–5,9	–45,7
	Ploskoriznyy	62,8	10,2	75,8						
	Polytsevo cultivation of the land holding	49,4	8,0	59,6						
	Surface	69,0	11,2	83,3						
LSD_{05}systemy agriculture								0,5	0,25	0,62
LSD_{05}systemy cultivation								0,58	0,29	0,72
LSD_{05} factors								1,01	0,5	1,24

Conclusions: As a result of research the removal nutrients that are used agrophytocenoses weeds in sugar beet. The highest removal and weight of weeds at the end of the growing season was for biological farming systems, indicating the need to develop effective biological controls weedy groups in agrophytocenoses.

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Анотація

Танчик С. П., Сальніков С. М.

Винос елементів живлення бур'янами з ґрунту агрофітоценозу буряків цукрових

У статті висвітлено основні результати по вивченню кількості елементів живлення, винесених основними бур'янами що сформувалися в агрофітоценозі буряків цукрових залежно від систем землеробства, в умовах Правобережного лісостепу України, та зумовлений цим недобір урожаю коренеплодів буряка цукрового.

Ключові слова: *винесення елементів живлення, буряки цукрові, забур'яненість, агрофітоценоз, урожайність*

Аннотация

Танчик С. П., Сальников С. М.

Вынос элементов питания сорняков с почвы агрофитоценоза сахарной свеклы

В статье отражены основные результаты по изучению количества элементов питания, вынесенных основными сорняками сформировавшиеся в агрофитоценозов сахарной свеклы в зависимости от систем земледелия, в условиях Правобережной лесостепи Украины, и обусловленный этим недобор урожая корнеплодов свеклы сахарной.

Ключевые слова: *вынос элементов питания, сахарная свекла, засоренность, агрофитоценоз, урожайность*