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## Assessment of Under-Ground Pests' Density in Potatoes and Legumes Grow After Winter Wheat

Khudaykulov Azamjon Mirzakulovich, doctorate,

Anorbayev Azimjon Raimkulovich, doctor of agriculture science,

Kholliiev Assomiddin Turaevich, candidate of agricultural sciences,

Sobirov Bekzod Bekmurod ugli, master degree,

Tashkent state agrarian university

**Annotation:** *The results of held researchers in determining percentage of underground pests spread, winter phases, biological indexes in the fields of rotation croppotatoand win wheat were discussed in the article. According to that, soil layer of potato and winter wheat fields which were taken for experiments should be dug to 5, 10, 15, 20, 25 sm and all kinds of underground pests, fall armywarm (*Agrotis segitum* Den. Et Shiff), may bugs (*Melolontha melolontha*), click beetles (*Elateridae*) larvae will bedetermined. Every found soil pests in the fields of the potatoes and win wheat are compared, they are analyzed on the base of common methods. Practical conclusions and*

*recommendations were given based on results.*

**Key words:** Underground pests, the field of rotation crop potato and win wheat, root neck, seedlings, buds, leaf and stalk pests.

**Introduction.** The resolution of the President of the Republic of Uzbekistan from the 1<sup>st</sup> of June, 2017 “About measurements to deliver material- technical resources in time required to place and grow rotation crops on the fields which are freed from winter wheat in 2017” is very important. Potato was planted on the fields of main and rotation crops and total yield was 2.9 million tons of potato was harvested in 2016. Potato was grownas a rotational

crop in 37 thousand hectares of field and 3.5 million tons of potato was harvested in 2017. [8].

Specific natural climate conditions of Uzbekistan as well as favorable weather temperature during plant vegetation periods create advantageous condition to develop pests of agricultural crops. That is why thousands of pests and diseases develop in the agricultural crops and they affect on the both quality and quantity of the yield.

Unique political forming and realizing it to increase productivity of agricultural crops and protect them from decreasing must be based on protection them from pests, diseases and weeds effectively using less poisoning, ecologically safety chemical and biological means 15-20% of harvests are lost because of harmful impact of under soil pests of grain, rotated carrots and potatoes. From these pests armyworm (*Agrotis segetum* Den. Et Schiff), click beetles, calf headbugs, march beetle (*Melolontha afflicta* Ball), marble beetle (*Polyphylla adspersa*), May

cochchafer (*Melolontha melolontha*), eat roots stalk and leaves of main and rotated agricultural crops and make significant harm to the yield. Most of these under soil pests have several years of vegetation period and they place in the soil carefully and it will be main factor to damage 25-30% of plants of rotated crops [4] 51 kinds of pests belonged to 15 families are found in the crops of Solanaceous family. Out of 51 identified pests 40 of them are found in tomatoes and egg plants, and 48 of pests are in potato [3].

The importance of preparation period in winter for winter period of cutworms on the field, favorable weather condition years will be convenient to increase more pests.

Wintering cutworms as well as control types of pests in fall army worm is useful for them from the second decade of August because of accumulated degree days [7].

In this reason researchers were held to assess density and determine under soil pests, level of appearance,

winter stages, biological indexes in wheat and rotated potatoes.

The object and methods of the research. 2 hectares of rotation crop potato fields are chosen for researchers in farm “Salim Bakhobov”, in the district of Bulugur, Samarkand province.

First of all, 25x25m of soil samples were taken in diagonal (chess) methods from 5, 10, 15, 20 and 25 m dug layer from these fields and soil were passed through entomological sieve in different measures. (Polyakov, 1980).

Examples were taken from 10 places in winter wheat and rotation crop potato fields, in an average 1m<sup>2</sup> (inside and round of field were calculated), the density in the grain and rotated potato were determined.

Taken results were analyzed on the base of common methods [1; 5;]

**Results.** During held researches 5m of soil layer in 1m<sup>2</sup> (in chess method) taken from 2 hectares of potato field which were planted after winter

and after checking pests were not found. 1.7 units of fall army worm larva, 1.3 units of wire worm larvae were found in the 5-10cm of soil layer in experiment field 10-15cm of soil was dug in this way and taken soil was passed through sieve. According to this the number of fall army worm larva was 4.7, wire worm larva 3.7. 15-20 and 20-25cm of soil layer were checked in this field and only 1.3 and 1.2 units of may bugs were found in worm phase.

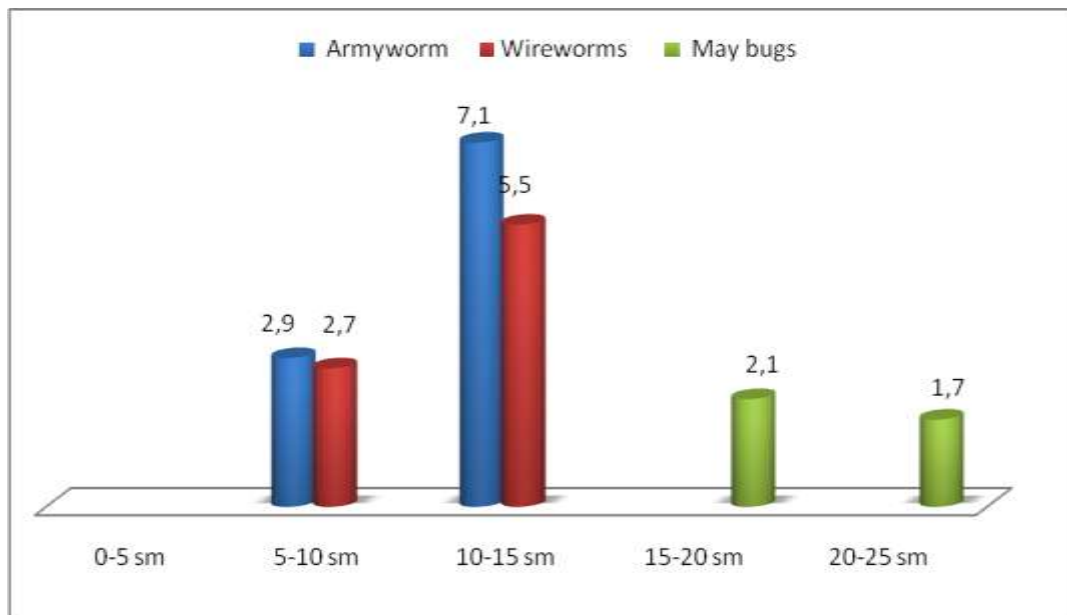
When 5cm of soil layer was checked in 7 hectares of winter wheat field any pests weren't found. When soil layer was dug till 5-10 and 10-15cm 1.2-2.6 units of fall army worm larvae were found. 1.4-1.8 units of wire worm larvae were determined.

Also, when soil layer was dug till 15-20 and 20-25cm and soil was passed through sieve, 0.8-0.5 units of may bugs in worm phase were found. The results of this research are given in (Diagrams 1).

**Diagrams 1.**

*Assessment of density of under soil pest population in winter wheat and rotation crop potato and legumes fields.*

*(Farm “Salim Bakhobov” in Bulungur district, Samarkand province. 2016-2017.)*



Every found pests from the soil layer in the fields of wheat and potato were compared on the base of held researches, variation coefficients were analyzed in percentage. Results are given in the following table 1.

**Table 1**

*Assessment of density of under soil pest population in the fields of winter and rotated potato and legumes (Farm “Salim Bakhobov” in Bulungur district, Samarkand province 2016-2017).*

Expriment area	Limit	$m \pm m$	$\sigma$	Cv,%	t(1-11)
The number of pests in the rotated potato and legumes after winter wheat	0.5-1.6	1.08±0.15	0.42	39.45	7.32
The number of pests in the	1.2-2.1	1.66±0.12	0.35	21.55	

winter wheat fields					
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Note: Limit- number vibration;  
 $m \pm m$ - overage index and its errors;  $\sigma$ -  
standard limits (average square limit);  
 $C_v$ - variation coefficients, in percentage;  
student coefficient.

According to that when the number of pests in rotation crop potato fields after winter wheat in Experiment 1 are was analyzed, Limit- number variation consists of 0.5-1.6,  $m \pm m$  – average index and its errors reached  $1.08 \pm 0.15$ .  $\sigma$ - standard limit ( average square limit ) consisted of 0.42 and  $C_v$  – variation coefficient was 39.45% (in Experiment 2) or limit – number vibration of the pests in winter wheat field was 1.2-2.1 average index and its errors was  $1.66 \pm 0.12$ . In this version standard limit (average square limit) was 0.35 and the percentage of variation coefficient in rotation crop potato field was much lower or it was 21.55%. According to the analysis of experiment the fact that number of pests in potato fields were more than in wheat fields

was proved, or it consisted of  $t = 7.32 (p \geq 0.05)$ .

**Conclusion and recommendation.** The conclusion of taken results are the followings: Pests can feed in potato fields with leaves and stalk, they can winter under the soil and they can increase potato field than in the cultivated fields of winter wheat. This under soil pests can damage main and rotation c vegetable crops and potatoes seriously in the next year. Taking these facts into consideration, introducing effective measurements against under soil pests in time, planting rotated vegetables, if the number of pests` increase using poisoning chemical pesticides are recommended.

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