



# THE EFFICIENCY OF PIVOT 10% WSC HERBICIDE AGAINST DODDER (*CUSCUTA CAMPESTRIS*) IN CARROT FIELD

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## ABSTRACT

*It is known that autotrophic weeds are serious competitors of agricultural plants in the consumption of nutrients and water from the soil, and dodders stick to the stalks of cultivated plants and feed on their juices. On the basis of the tests carried out against the dodder in carrot crops, the use of the herbicide Pivot, 10% WSC in the norms of 1.0 - 1.5 l/ha.*

**KEYWORDS:** *carrot field, dodder, Cuscuta campestris, herbicide, PIVOT 10% WSC, efficiency.*

## INTRODUCTION

The importance of agriculture is of great significance to meet the demand of population for food products and the industry for raw materials. Effective control measures have been developed on plant diseases caused by parasites of organisms (virus, mycoplasma, bacteria, fungi) and their harm has been greatly reduced since today. However, complete control measures haven't been developed yet on high-growth floral parasites. Particularly, dodder – this parasite has still been regarded as quarantine object and it can be found in any farm of the territory of Uzbekistan. Even though the farms struggle against dodder by various control measures, but this parasite can anyway enter their fields by the seeds or other different ways from neighbors farm, district, region or the fields of border countries. In recent years, dodder is causing great damage not only to vegetable, melon and field crops, but also to the gardens and vineyards. Therefore, in order to increase yield of agricultural crops it is expedient to develop complete control measures on flower parasitic plants..

Elaboration of effective control measures over the dodder that is considers flower parasite cannot be performed without knowing biology and ecology of parasite organism and host plant. Today, this problem is regarded as one of main issues of agriculture. According

to P. Arkhangelsky [1], flax dodder causes to decreasing of plant weight, stalk thinning and mal development, less fibrillation, less fibre production and also negatively affects to fibre length and elasticity. It can reduce the yield of flax fibre by 30%, yield of its seed by 90%. Dodder seeds (*Cuscuta*) accumulate in the field being a source of contamination. Because one of parasitic feature of dodder is abundant seed producing. One dodder on the grass can produce a seed with four number value. On the trees this value equals to 5 numbers. One dodder on a three-year old poplar produced more than 27 thousand pieces of seeds [3].

According to some researchers, it is important to conduct control measures of almost all types of dodder at the stage of their seed germination, that is, before they climb on host plant [4].

We learned the effect of Pivot, 10% s.k.e herbicide on agricultural crops parasite dodder seeds at the stage of their germination in the soil.

## MATERIALS AND METHODS

If the studied field is of 50 ha, in 5 plots, or from 50 ha to 100 ha, in 10 plots, and if in more than 100 ha then in 20 plots, the calculation work was conducted. The areas under observation were divided into specific groups on dodder spread: in 1m<sup>2</sup> 1-5, 6-15, 16-50, 50-100 and 100 pieces more plants were infected with

odder. When it was required to conduct these measures urgently, we carried out dodder counting measures after processing crop interrows in irrigated areas. If the dodder did not spread widely in the field, then the calculation was done only for the fields with dodder spread [5]. The determination of the varieties of dodder was conducted by the method of A.Ya.Butkov [2].

At the experimental station of Tashkent state agrarian university, on small plots the solutions of herbicide PIVOT 10% WSC (a.i. *Imazethapyr*) in the norms 0,5 l/ha, 1 l/ha and 1,5 l/ha, recommended norm of TREFLAN 24% EC (a.i. *Trifluralin*) in 4 l/ha as a standard was tested against carrot dodder. For each variant of this experiment 25 m<sup>2</sup> experimental plot was allotted and these variant were repeated four times. Carrot and dodder seeds were sown in the soil together. Then the PIVOT 10% WSC in the norm of 300 l/ha was sprinkled to soil surface considering the variants. The remaining agro-technical measures were carried out on the basis of general rules.

### RESULTS AND DISCUSSION

The PIVOT 10% WSC with its all variants used against the dodder in the field of carrot showed good result, they reduced the germination of dodder seeds by 100%. After 45 days from the application of herbicide 0,2% dodder spread was observed only in that variant where 0,5 l/ha norm was used. In other variants dodder

was not observed in carrots. At the same time in the control variant its spread was 22,6%. In the next period of dodder spread determination, that is, after 60 days from the application of PIVOT 10% WSC the spread of dodder made 0,4 and 0,1 % in the variants in which 1 l/ha and 1,5 l/ha norm was used. While in the variant with 0,5 l/ha norm this indication was 9,7 %. With TREFLAN 24% EC. in the first analysis the spread of dodder made 0,5%, after 45 days 12,9% and after 60 days it was 19,7%. Before harvesting the carrot in experimental variants the spread of dodder showed 21,7; 6,3 and 6,2% relatively, in standard it was 30% and in control this indication reached to 59,6%.

The PIVOT 10% WSC used against the dodder in the carrot has affected to the yield as well. In experimental variants the carrot yield was equal to 208, 226 and 226,4 c/ha, in standard variant 192 c/ha while in control variant it constituted 183 c/ha. It was obvious in the experiment that the all tested norms of PIVOT 10% WSC showed good results.

The solutions of PIVOT 10% WSC in the norms of 0,5; 1,0 and 1,5 l/ha which gave good results in small experimental plots have been tested in production condition too. The recommended norm of TREFLAN 24% EC as a standard gave a bit less results and also caused to yield decrease.

**Table-1**

**The efficiency of PIVOT 10% WSC herbicide against the dodder (*Cuscuta campestris*) in the carrot fields (Experimental station of Tashkent state agrarian university)**

№	Experimental variants	Herbicide application, l/ha	Herbicide concentration, %	Herbicide spray date	Dodder spread,%			Dodder spread before harvesting carrot yield, %	Carrot yield, c/ha
					Determination date				
					2.VII	17.VII	2.VIII		
1	Control (without herbicide)	-	-	-	7,5	22,6	38,5	59,6	183
2	TREFLAN, 24% EC, (standard)	4,0	1,3	3.VI	0,5	12,9	19,7	30,0	192
3	PIVOT 10% WSC	0,5	0,16	3.VI	-	0,2	9,7	21,7	208
4	PIVOT 10% WSC	1,0	0,3	3.VI	-	-	0,4	6,3	226
5	PIVOT 10% WSC	1,5	0,5	3.VI	-	-	0,1	6,2	226,4

Note: EC – emulsion concentrate, WSC – water-soluble concentrate, l/ha – litres/hectare, c/ha - Centner/hectare.

**Table-2**

**The productivity of the carrot of the field where the PIVOT 10% WSC herbicide was applied against the dodder (*Cuscuta campestris*) (Tashkent region, Tashkent district “Guljahon Tabarruk” farm fields)**

№	Experimental variants	Herbicide application, l/ha	Dodder spread, %		Crop productivity, c/ha		Efficiency of herbicide over the control, %	
			In experiment	In control	In experiment	In control	By dodder spread	By carrot productivity
1	Control (without herbicide)	-	-	44,3	-	153	-	-
2	PIVOT 10% WSC	0,5	6,7	-	197	-	84,9	28,8
3	PIVOT 10% WSC	1,0	-	-	210	-	100	37,2
4	PIVOT 10% WSC	1,5	-	-	211	-	100	37,9

Production experiments on testing the effect of herbicide PIVOT 10% WSC against carrot dodder were carried out on the farm “Guljahon Tabarruk” (1,2 hectare) in Tashkent district of Tashkent region. In production condition 1 and 1,5 l/ha norms application of PIVOT gave good results too and the spread of dodder was not observed in these areas. Dodder spread of 6,7% in carrot was noticed in the areas where 0,5 l/ha norm of PIVOT was used. While in the fields without herbicide dodder spread reached to 44,3%. Carrot yield was equal to 197, 210 and 211 c/ha in the fields where the PIVOT 10% WSC was applied (0,5; 1 and 1,5 l/ha), while in control variant this indication was 153 c/ha. Against the dodder in the carrot 1 and 1,5 l/ha norms of PIVOT 10% WSC presented almost the same results, considering the cost of PIVOT 10% WSC and its application norm, we recommend the solution of 1 l/ha rate of PIVOT 10% WSC.

### **CONCLUSIONS**

It was observed that the seeds of dodder might not germinate completely although the favourable condition was created for them and the seeds that didn't germinate could maintain their viability for a long time under the soil unless the favourable condition was available for germination. The best result was obtained in the variant in which 1,0 l/ha norm of PIVOT 10% WSC herbicide was applied against potato, onion, carrot, alfalfa, vine, poplar and rose dodder varieties.

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