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**RESEARCH ON THE EFFECTIVENESS OF HERBICIDES  
IN CONTROLLING THE WEEDS FOR GROWING PEANUTS ON SANDY  
SOILS IN SOUTHERN OF OLTENIA**

Dima Milica<sup>1\*</sup>, Drăghici Reta<sup>1</sup>, Drăghici Iulian<sup>1</sup>, Diaconu Aurelia<sup>1</sup>, Netcu Florentina<sup>1</sup>

<sup>1</sup>Stațiunea de Cercetare-Dezvoltare pentru Cultura Plantelor pe Nisipuri Dăbuleni

\*Correspondence author. E-mail: milicadima@yahoo.com

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**ABSTRACT**

*Peanut culture is very sensitive to weeds. Therefore, controlling the weeds is a very important link in the technology of growing peanuts on sandy soils. The researches on cultivation of peanuts has highlighted the possibility of controlling the weeds in peanut crops with the help of herbicides, being one of the most effective methods in controlling the weeds. Postemergence herbicides with Fusilade Forte 150EC 1.5 l / ha + Corum + adjuvant Dash HC 1.25 l / ha, had a good efficacy in controlling the dicotyledonous weeds.*

*The lowest degree of weeding at harvest under the influence of herbicides (15.4%) compared to control 2 (cultivated), was recorded by spraying the peanut crop with Dual Gold 960EC 1.5 l / ha + Fusilade Forte 150EC 1.5 l / ha + Corum + Dash HC adjuvant 1.25 l / ha.*

**INTRODUCTION**

Using of fertilizers and water for irrigations on the psamosoils in the south of Oltenia offers favourable conditions of growth and development for cultivated plants, but also for weeds.

The high degree of weeding on sandy soils is determined by the fact that weed seeds retain their germination capacity easily and for a long time, due to good aeration and lower soil moisture.

The peanut culture is very sensitive to weeds. Therefore, controlling the weeds is a very important link in the technology of growing peanuts on sandy soils. In many countries, weed competition can cause production losses in peanut crops (Goldson 1967, Ishag 1971, Carson 1976, Rethinam et al. 1976, Drennan & Jennings 1977, Lagoke et al. 1981, Yadav et al. 1984, Hamada et al. 1988). Competition between plants and weeds varies on account of growing conditions (Smartt 1964, Schiller et al. 1976), cultivated genotype (Brown 1965), applied fertilizers (Ashrif 1967) and existing spectrum of weeds (Hamada 1988). The results on controlling weeds for peanuts show that weeding in the first four to eight weeks after sowing is essential to prevent production losses (Dumas & Ausan 1978). Also, reducing the sowing distance between rows could contribute to lower weed competition on crops (Buchanan & Hauser 1980).

The researches on the peanut crop by Milica Dima 2004, highlighted the possibility of weed control in peanut crops with the help of herbicides, being one of the most effective methods of weed control.

The use of herbicides amplifies the coefficient of capitalization by cultivated plants of vegetation factors: light, nutrition space, fertilizing elements, irrigation (Snake 1987, Pintilie et al. 1972).

The chemical control of weeds creates favourable premises for a completed mechanization of agricultural crops, while facilitating the increase of the efficiency of some agro-phytotechnical measures and the cultivation parameters for them (Şarpe et al. 1981).

The effective control of weeds for peanuts is generally achieved through the use of a herbicide program that consists in a preplant incorporation or pre-emergence treatment, followed by a postemergence treatment.

Proper identification of weeds is essential before deciding on a control program that includes the purchase of herbicides.

## MATERIAL AND METHODS

In order to establish a broad-spectrum strategy to control monocotyledonous and dicotyledonous weeds in peanut cultivation, in the period of 2019-2021, 5 herbicides in different combinations and doses were studied.

The experiment was placed in the field using the randomized block method.

The experimental variants were: V1- control 1(uncultivated), V2- control 2(cultivated), V3- Dual Gold 960 EC, V4-Stomp Aqua, V5- Dual Gold 960 EC + Fusilade Forte 150 EC, V6- Stomp Aqua + Fusilade Forte 150 EC, V7- Dual Gold 960 EC + Fusilade Forte 150 EC + Corum + adjuvant Dash HC, V8- Stomp Aqua + Fusilade Forte 150 EC + Corum + adjuvant Dash HC, V9- Dual Gold 960 EC + Fusilade Forte 150 EC + Benta 480 SL, V10- Stomp Aqua + Fusilade Forte 150 EC + Benta 480 SL.

During the vegetation period, observations and experimental determinations were made regarding:

- herbicide selectivity by grades on the EWRS scale (grade 1-selective, grade 9-non-selective);
- the effectiveness of herbicides on the degree of weeding through grades on the EWRS scale (grade 1-very good efficacy, grade 9-very poor efficacy);
- degree of weeding at harvest: by EWRS notes (1-9) and gravimetric by groups of weeds;
- some elements of productivity: no. of pods per plant, production of pods per ha.

Peanut pod production was calculated at STAS humidity of 9%.

The interpretation of research results was done by the method of analysis of variance.

## RESULTS AND DISCUSSIONS

The bad weeds on sandy soils are *Cynodon dactylon* and *Sorghum halepense*, species of monocotyledonous weeds that are common in peanut cultivation due to the high degree of infestation of sandy soils, but also a dicotyledonous species, *Ambrosia artemisiifolia*.

Table 1

## Results of selective herbicides applied to peanut crop

No.	Variant	Dose (l/ha)	Epoch of application	EWRS Note (1-9)
1	Control 1 (Uncultivated))			
2	Control 2 (Cultivated)			
3	Dual Gold 960EC	1,5	preemergence	2
4	Stomp aqua	4	preemergence	1
5	Dual Gold960EC	1,5	preemergence	1
	Fusilade	1,5	postemergence 1	
6	Stomp aqua	4	preemergence	1
	Fusilade Forte 150EC	1,5	postemergence 1	
7	Dual Gold 960EC	1,5	preemergence	2
	Fusilade Forte 150EC	1,5	postemergence 1	
	Corum+adjuvant Dash HC	1,25	postemergence1	
8	Stomp Aqua	4	preemergence	2
	Fusilade Forte 150EC	1,5	postemergence 1	
	Corum+adjuvant Dash HC	1,25	postemergence 1	
9	Dual Gold 960EC	1,5	preemergence	2
	Fusilade Forte 150EC	1,5	postemergence 1	
	Benta 480 SL	1,25	postemergence 1	
10	Stomp Aqua	4	preemergence	2
	Fusilade Forte 150EC	1,5	postemergence 1	
	Benta 480 SL	1,25	postemergence 1	

The results on the selectivity of the herbicides applied to the peanut crop showed that all the herbicides applied were selective for the peanut plants.

In the control of monocotyledonous weeds, the best results were obtained by using the combination of Dual Gold 960EC 1.5 l / ha + Fusilade Forte 150EC 1.5 l / ha + Benta 480 SL 1.25 l / ha (Table 2).

In terms of the weight of weeds per group, a total quantity of weeds of 11390 kg / ha is observed in the nonherbicide and untreated variant (control 1), and in the mechanically plowed variant (control 2) an amount of 6840 kg / ha annual dicotyledons and 2879 kg / ha annual monocotyledons. Compared to this variant, the best control of annual dicotyledonous weeds was achieved when the combination of herbicides Dual Gold 960EC applied preemergent + Fusilade Forte 150EC 1.5l / ha + Corum + Dash HC adjuvant 1.25 l / ha applied postemergent 1 (650 kg / ha annual dicotyledonous weeds). The smallest amount of weeds was obtained in the variant where the combination Stomp Aqua 4 l / ha + Fusilade Forte 150 EC 1.5 l / ha + Corum + Dash HC adjuvant 1.25 l / ha (2555 kg / ha weeds).

The number of pods per plant differs depending on the herbicide variants, indirectly correlating with the degree of weeding.

Compared to the unroasted control 1, in which 18.5 mature pods per plant were registered, the effectiveness of all herbicide variants is noticed, in which the number of pods per plant was between 22.6-49.6 pods per plant. The best results regarding the number of pods per plant were obtained by herbicide cultivation with Stomp Aqua 4 l / ha + Fusilade Forte 150EC 1.5 l / ha + Corum + adjuvant Dash HC 1.25 l / ha, followed by the variant herbicide with Dual Gold 960EC 1.5 l / ha + Fusilade Forte 150EC 1.5 l / ha + Corum + adjuvant Dash HC 1.25 l / ha.

Analyzing the production results obtained under the influence of herbicide (Table 3), a close correlation is highlighted between them and the value of the productivity elements. The variants with the best results regarding weed control presented maximum values in terms of production level.

Compared to the untreated control, in which a production of 373 kg / ha was obtained, all herbicidal variants achieved production increases between 279-1199 kg / ha.

The production of all herbicide variants was higher than that obtained at the plowed control three times, the best results being obtained by herbicide cultivation with Stomp aqua 4l / ha + Fusilade 1.5l / ha + Corum + Dash HC adjuvant HC 1.25 l / ha, a situation in which there was a significant increase in production compared to the hoe.

The results obtained for the non-herbicide variant, with a low production of 373 kg / ha of pods, highlight the importance of herbicides and maintenance works applied to the cultivation of peanuts on irrigated psamosols.

### CONCLUSIONS

All tested herbicides on peanuts showed selectivity for the plant. Post-emergence herbicide I with Fusilade Forte 150EC 1.5 l / ha + Corum + adjuvant Dash HC 1.25 l / ha, had a good efficacy in controlling the dicotyledonous weeds.

The lowest degree of weeding at harvest under the influence of herbicides (15.4%) compared to control 2 (cultivated), was recorded by spraying the peanut crop with Dual Gold 960EC 1.5 l / ha + Fusilade Forte 150EC 1.5 l / ha + Corum + Dash HC adjuvant 1.25 l / ha.

The lowest degree of weeding leads to the normal development of plant metabolism on account to a different way of the generative organs, especially in terms of ensuring good cultural hygiene and the availability of a large amount of water for productive consumption of peanuts.

The non-herbicide and the non-mechanical cultivation work led to a very significant decrease of the obtained production (373-424 kg / ha).

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Table 2  
Results regarding the efficacy of the herbicide for the control of weeds in peanut cultivation (gravimetric determinations at harvest (2019-2021))

No.	Variant	Dose (l/ha)	Epoch of application	Weight of weeds (kg/ha)			Total weight (kg/ha)	
				Annual monocotyledons	Perennial monocotyledons	Anuale dicotyledons	Kg/ha	%
1	Control 1(Uncultivated))			3525	193	7626	11390	112,2
	Control 2(Cultivated)			2879	436	6840	10150	100
3	Dual Gold 960EC	1,5	preemergence	419	0	14730	15149	149,2
	Stomp aqua	4	preemergence	448	869	11631	12948	127,5
5	Dual Gold960EC	1,5	preemergence	79	349	12839	13268	130,7
	Fusilade	1,5	postemergence 1					
6	Stomp aqua	4	preemergence	236	0	3865	4100	40,4
	Fusilade Forte 150EC	1,5	postemergence 1					
7	Dual Gold 960EC	1,5	preemergence	84	833	650	1567	15,4
	Fusilade Forte 150EC	1,5	postemergence 1					
8	Corum+adjuvant Dash HC	1,25	postemergence1					
	Stomp Aqua	4	preemergence	12	80	2523	2555	25,2
	Fusilade Forte 150EC	1,5	postemergence 1					
	Corum+adjuvant Dash HC	1,25	postemergence 1					
	Dual Gold 960EC	1,5	preemergence	0	72	8140	8212	80,9

9	Fusilade Forte 150EC	1,5	postemergence 1					
	Benta 480 SL	1,25	postemergence 1					
10	Stomp Aqua	4	preemergence	436	313	6877	7726	76,1
	Fusilade Forte 150EC	1,5	postemergence 1					
	Benta 480 SL	1,25	postemergence 1					

Table 3  
The influence of herbicidation on some elements of productivity and on the production of peanut pods (2019-2021)

No.	Tested herbicides	Dose (l/ha)	Epoch of application	Number of mature pods/plant (kg/ha)	Production			
					Average production (kg/ha)	Relativ production (%)	The difference compared to control (kg/ha)	Semnification
1.	Control 1 (Uncultivated))	-	-	18,5	373	-51	Mt.1	
2.	Control 2 (Cultivated)	-	-	22,6	424	100	Mt.2	
3	Dual Gold 960EC	1,5	preemergence	27,5	893	210	+468	
4	Stomp aqua	4	preemergence	27,1	703	165	+279	
5	Dual Gold960EC	1,5	preemergence	26,8	734	173	+310	
	Fusilade	1,5	postemergence 1					
6	Stomp aqua	4	preemergence	30,7	1408	332	+984	
	Fusilade Forte 150EC	1,5	postemergence 1					
7	Dual Gold 960EC	1,5	preemergence	38,5	1420	334	+996	
	Fusilade Forte 150EC	1,5	postemergence 1					

	Corum+adjuvant Dash HC	1,25	postemergence 1					
8	Stomp Aqua	4	preemergence					
	Fusilade Forte 150EC	1,5	postemergence 1	49,6	1623	382	+1199	*
	Corum+adjuvant Dash HC	1,25	postemergence 1					
9	Dual Gold 960EC	1,5	preemergence					
	Fusilade Forte 150EC	1,5	postemergence 1	30,0	1400	329	+976	
	Benta 480 SL	1,25	postemergence 1					
10	Stomp Aqua	4	preemergence					
	Fusilade Forte 150EC	1,5	postemergence 1	41,9	1468	345	+1044	
	Benta 480 SL	1,25	postemergence 1					

LSD5%= 1179 kg/ha

LSD 1%= 1605 kg/ha

LSD 0,1%= 2185 kg/ha