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EFFICIENCY OF NEW HERBICIDE COMBINATIONS APPLIED ON WEEDS IN SUNFLOWER

Introduction

As a rule, the occurrence of weeds is an important limiting factor in sunflower production. An efficient weed control is therefore necessary for a successful production of this crop. The results obtained in Yugoslavia over a period of several years confirm the value of herbicide application in modern sunflower production. Herbicides reduce large damages caused by weeds. The regular application of herbicides in all sunflower plots of the country is economically justifiable because the value of recovered yields exceeds the costs of herbicide application. Herbicides also enable a simpler and cheaper sunflower production without manual cultivations and high costs of manpower. It is a further confirmation of economic justifiability of this measure (Kosovac, 1965). A modern production of row crops, particularly of sunflower, suffers from an increasing shortage and cost of manpower necessary for repeated rooting out of weeds. As the situation is steadily growing worse these problems could bring in question the feasibility of the production of row crops. Herbicides seem to be the only solution.

The choice of herbicides applicable on sunflowers for a number of years can be considered satisfactory. However, it is necessary to keep searching for new solutions, with new kinds and combinations of herbicides. This was the purpose of the present research.

Method

The research conducted from 1967 to 1975 was performed in field conditions on chernozem on loess terrace (Nejgebauer, 1951; Živković, 1972).

The efficiency indicator of the tested herbicides and their combinations was the presence of weeds at the end of sunflower vegetation in the test plot. The integral indicator of selectivity and efficiency of the tested herbicides was the seed yield of sunflower. Two manual cultivations and two cultivations between rows were performed in the check; in the variants with herbicides, only two cultivations between rows were performed. The list of the herbicides and their dosages is given in the following chapter.

Results and Discussion

Herbicide application on the basis of its selectivity towards sunflowers was made possible by the development of prometryn because it had a satisfactory effect on weeds. Shortly afterwards, the choice of herbicides applicable on sunflower was widened by the development of linuron.

Five-year average results of the efficiency of these herbicides on the weeds in sunflower plots are given in Graph 1.

According to our results, the dosage of prometryn of 1.5 kg/ha applied on sunflowers grown on chernozem had a satisfactory efficiency and spectrum of action. The dosage of linuron of 1 kg/ha had considerably smaller effect regarding the overall efficiency and particularly regarding the efficiency to control the annual grasses *Setaria* spp and *Echinochloa crus Galli*. These results explain why chiefly prometryn has been used in Yugoslavia. The results of our research support the general practice in sunflower production and show the

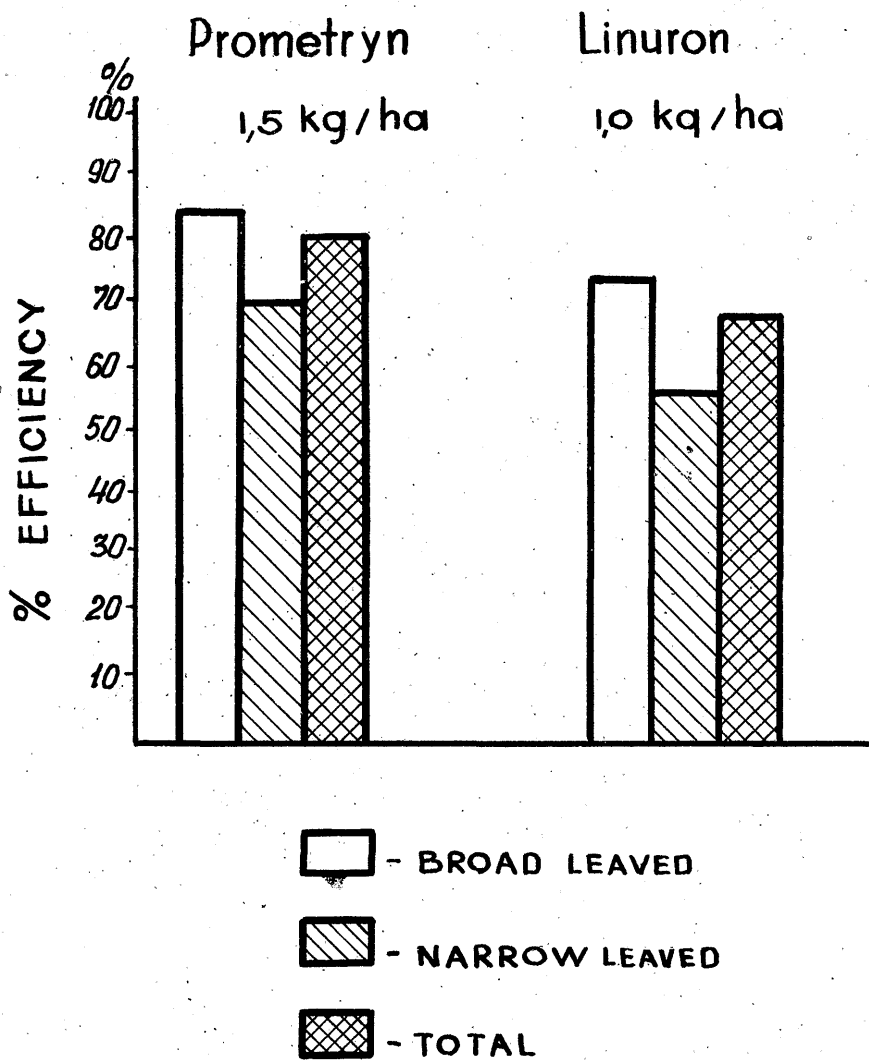


Fig. 1. Efficiency of prometryn and linuron on weeds in sunflower

profitability of this herbicide. The herbicide value of prometryn is only practically satisfactory; nevertheless, it brought a higher competitiveness of sunflowers towards the weeds - a more rapid growth of sunflowers at the beginning of vegetation and a better shading of the weeds later on.

The choice of herbicides applicable on sunflower was further widened by the development of terbutryn. Table 1 gives the results of our research at that stage.

The results in Table 1 show that terbutryn or its combination with prometryn do not provide a satisfactory solution regarding the efficiency and durability of action against the weeds in sunflower plots.

The general tendency was to combine the herbicides into the preparations which would be more efficient and would have a better spectrum of action in sunflower plots than the present herbicides. The results we arrived at are given in Table 2.

References

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Table 1

Efficiency of Terbutryn Applied on Sunflowers

Herbicide	Dosage, kg/ha	Grain yield, c/ha		Number of weeds per 1 sq m					
		1972	1973	1972		1973			
				Broad leaved	To- tal	Broad leaved	To- total		
Check	-	28.2	36.9	2.3	10.0	12.3	28.5	14.0	42.5
Prometryn	1.5	27.1	36.4	0.4	9.5	9.9	5.1	1.4	6.5
Terbutryn	1.5	26.1	36.2	1.1	11.7	12.8	5.9	2.2	8.1
Prometryn +	0.75								
	+	27.3	35.0	0.6	13.4	14.0	4.6	5.0	9.6
Terbutryn	0.75								

LDS 5% 2.4 2.6

1% 3.2 3.4

