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COMPETITION BETWEEN WEEDS AND MAIZE PLANTS

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Abstract

The paper presents the results of our research performed at the experimental field of the complex farm-crops and animals – Miloşeşti – Ialomiţa. The experiment has 10 treatments which differ by the periods in which mechanical cultivations and on the rows manuals hoeings are performed. These variations of works gives the opportunity to know the critical period of competition during the vegetation period.

The maize hybrid Olt Has been cultivated. The weediness has been determined numerically and gravimetrically. For the maize plants the roots and aerial weights and yields have been determined. The analysis of the obtained results conduct to the conclusion that the critical period of weediness for the maize crop starts with the phase, 20 days from the rising (20 DAR) and becomes intensely in the period 20-40 DAR. The highest damages are produced by the weedings in the plant rows.

INTRODUCTION

It is known that weedness are competitors of the cultivated plants for the vegetation conditions. But the same time they are components of the biodiversity and contribute to establish the equilibrium in the agroecosystem [2].

In the last 5-6 years, Sustainable Management of the weeds is consolidated more and more. The complex measures of this system must be established for the conditions of every zone or farm [1, 3]. Information regarding the competition between weeds and cultivated plants, critical periods of the competition, harmfulness threshold, news machines to recognize the weeds in the field are necessary.

Our paper contains contributions to the realization of these demands.

MATERIAL AND METHODS

Research was performed on the experimental field of the complex-farm crops and animals - Miloşeşti - Ialomiţa. The experiment had 10 treatments (Table 1) with different periods in the performing mechanical cultivation and manual hoeing in the rows of the plants. These difference give the possibility to establish the critical period of the competition between the weeds and the maize plants during the vegetation period. The Olt hzbrid was grown. The surface of a plot was 23.1 m^2.

The experiment has 4 replications. Determinations were performed regarding the weediness numerically and gravimetrically, in three replications. In the phase of milk-wax, was determined the weight of the plant roots, for the 0-30 cm soil depth, the maize yields was calculated for 15.5% humidity.

Table 1

Treatments of the experiment

No.	Cultivations and their periods DAR = days after maize rising				
	Mechanical			Manual on rows	
	I 20 DAR	II 40 DAR	III 60 DAR	I 20 DAR	II 40 DAR
1	Yes	Yes		Yes	Yes
2	No	Yes	Yes	Yes	Yes
3	Yes	Yes		No	Yes
4	No	Yes	Yes	No	Yes
5	Yes	No	Yes	Yes	Yes
6	Yes	Yes		Yes	No
7	Yes	No	Yes	Yes	No
8	Yes	Yes		Yes	Yes
9	Yes	Yes		Yes	Yes
10	No cultivation				

RESULTS AND DISCUSSION

The paper presents only part of the results.

The data regarding weediness at the time of the first cultivation (at 20 DAR) showed no important differences between treatments; they varied 75-83 plants/m^2 and from these half were monocotiledonate and half dicotiledonate.

At the harvest of the maize, the number and the dry weight of the weeds varied depending on the treatments as shown in Table 2.

Table 2

Weediness at the harvest of maize

Treatments no.	Weeds		Dry weight	
	No./m^2	%	kg/ha	%
1 st.	56	100	420	100
2	58	104	415	99
3	67	120	537	128
4	72	129	526	125
5	57	102	417	99
6	61	109	438	104
7	65	116	550	131
10	140	250	1800	328

DL5% - 30
DL1% - 58
DL0.1% - 95

Table 3

Root weight of the maize plants on the milk-wax phase

Treatments no	Soil depth - cm			Total	%
	0-10	10-20	20-30		
1(st)	26	8	3	37	100
4	20	6	2	28	75
7	25	6	2	33	89

DL for Total: 5% = 3; 1% = 5; 0.1% = 8

Table 4

Weight of the aerial plants of maize on the milk-wax phase

Treatments no	g/pl	D	%	Signification
1(st)	240	Mt	100	Mt
4	160	-80		000
7	210	-30		00

DL5% = 20; 1% = 32; 0.1% = 59

Data regarding the roots and aerial weights of the maize plants demonstrate a very intense competition of the weeds during the period 20-40 DAR.

Data regarding the yield (Table 5), also demonstrate that there is a critical period of competition during this period.

Table 5

Yields of maize - 2009

Treatments no.	kg/ha	D	%	Signification
1	5700	St.	100	St.
2	5130	-570	90	00
3	4610	-1090	81	000
4	4110	-1590	74	000
5	5290	-410	93	0
6	5010	-690	88	00
7	4740	-960	77	000
8	5760	60	101	-
9	5650	-50	99	-
10	2250	-3450	39	000

DL5% = 380 kg/ha
DL1% = 570 kg/ha
DL0.1% = 830 kg/ha

CONCLUSIONS

1. The critical period of the competition between weeds and corn plants starts at 20 DAR and becomes more intensive by 40 DAR.

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