CHAPTER 3
CROP GROWING

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THE YIELD OF CICER ARIETINUM VARIETIES DEPENDING UPON FERTILIZERS RATES

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The essence of the problem. Leguminous crops are one of the most important sources of vegetable protein for human nutrition and feeding animals. In Ukraine sown areas of soybean and peas prevail. In recent years producers interest is grown by such crop as cicer arietinum. It belongs to perspective crops. Over the past 10 years, the area of crops has increased by more than 10 times and is 50 – 70 t/ha [3].

Cicer arietinum grain contains up to 34 % of protein, which is close to egg quality [1]. Relatively high fat content significantly improves its nutritive quality. According to the ten-point scale of the Indian scientist K.R. Paul, the cicer arietinum has a total nutritive value of 8 points, lentil and soya only 6, peas – 3, china – 2 points. It is important to note that the grain of cicer arietinum does not contain anti-nutrients, so there is no need for heat treatment when feeding animals.

In the opinion of some scientists, peas, soybeans and cicer arietinum should not compete, but should supplement each other. Crops differ in their period of vegetation, physiological needs of water, resistance to diseases and pests, therefore, in different years, one of these crops may significantly exceed others. The current trend of climate change in the direction of warming requires revision of not only cultivation technologies, but also the search for more adapted crops to change the hydrothermal conditions [2]. According to its biological characteristics, it refers to cold resistant and drought resistant crops. In the conditions of the western forest-steppe of Ukraine, the technology of cicer arietinum cultivation has not been sufficiently studied, as evidenced by the low yield of grain. Therefore, it is important to study the productivity of new varieties of this crop, in particular, to establish optimum seeding conditions of sufficient moisture.

Presentation of the main material. The results of the research showed a significant difference in productivity between Cices Arietinum varieties. The smallest yield was formed in the Triumph variety, which fluctuated within 1,72–2,20 t/ha (Table 1). The variety Pamyat provides a significantly higher yield that has changed in the range of 2,60–3,15 t/ha, which is higher than the Triumph variety, depending on the sowing rate, by 0,88–0,98 t/ha. The highest yield was found in the Yarina variety – 2,82–3,40 t/ha. It prevails the Pamyat variety by 0,14–0,25 t/ha and the Triumph variety by 1,10–1,20 t/ha. The lower yield of the Triumph variety in our researches can be explained by less resistance to deseases in the conditions of the western forest-steppe.

Table 1

The yield of cices arietinum varieties depending on sowing rates, t/ha

Sowing rate, mln/ha	2016 y.	2017 y.	Average for 2 years	Increase of the yield	
				т/га	%
Variety Pamyat					
0,4	2,43	2,77	2,60	-	-
0,5	2,75	2,89	2,87	0,27	10,4
0,6	2,90	3,12	3,01	0,41	15,8
0,7	2,97	3,23	3,10	0,50	19,2
0,8	3,05	3,25	3,15	0,55	21,2
0,9	3,05	3,15	3,10	0,50	19,2
Variety Triumph					
0,4	1,61	1,83	1,72	-	-
0,5	1,85	2,03	1,94	0,22	12,8
0,6	1,97	2,11	2,04	0,32	18,6
0,7	2,03	2,25	2,14	0,42	24,4
0,8	2,11	2,29	2,20	0,48	27,9
0,9	2,03	2,21	2,12	0,40	23,3
Variety Yarina					
0,4	2,62	3,02	2,82	-	-
0,5	2,91	3,17	3,04	0,22	7,8
0,6	3,15	3,31	3,23	0,41	14,5
0,7	3,24	3,38	3,31	0,49	17,4
0,8	3,34	3,46	3,40	0,58	20,6
0,9	3,10	3,38	3,24	0,42	14,9
SED_{05}, t/ha	0,07	0,07			

In the process of developing elements of intensive technology of the cultivation of new varieties of cicer arietinum, it was important to establish their

optimal sowing rates. All studied varieties formed the highest yield of the variant with the sowing rate of 0.8 mln/ha (Table 1). It remained high in the range of sowing rates of 0,7–0,9 mln/ha. In conditions of sufficient moisture, the lowest yield, as expected, was at the minimum sowing rates. Thus, if the variant with the sowing rate of 0,8 mln/ha , the yield of Yarina variety is 3,40 t/ha, but with the sowing rate of 0,4 mln/ha it has decreased to 2,82 t/ha or by 0,58 t/ha. A similar regularity was observed in other varieties.

CONCLUSIONS

1. Among the varieties of Cicer Arietinum , the highest yield was formed by the Yarina variety – 2,82 – 3,40 t/ha, which is considerably higher compared to the varieties Pamyat and Triumph.
2. In conditions of sufficient humidification of the western forest-steppe, the highest yield of Cicer Arietinum was obtained at the sowing rate of 0,8 mln/ha, reducing of the sowing rates resulted by the decrease of grain yield.

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