THE INFLUENCE OF THE AGRO -FITOTEHNICAL FACTORS TOWARDS SOME MORPHOLOGICAL COMPONENTS OF THE SEED PRODUCTION AT THE DROPIA SORT OF WINTER WEAT

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Abstract

The main factors for the production of quality seeds of grain are the abidance by the sowing period and by the density of the sprout able seeds.

Key words: *Dropia winter weat,biological link Base*

INTRODUCTION

The production potential of the seeds can be highly improved by the application of an optimal culture technology, beginning with placing the plot of wheat/grain after a favorable sort of seeds (the cereals are to be avoided in order to avoid imperfections and the transfer of diseases), balanced fertilizing, fighting diseases and injurious substances, keeping the plot clean of weeds etc.

Because of this, deciding which are the technological and ecological factors that affect the cultural value and the production potential of the seeds is of the utmost importance.

MATERIAL AND METHOD

In the experiments done at the Leş Agricultural Commercial Society during 2004-2006 was used the Dropia winter wheat, the biological link "Base" (B). Among the agro-fitotechnical measures applied were: the carrying out of two agro funds, N_{60} and N_{120} active substance/hectare, three epochs of sowing: 25 IX, 10X and XI and 5 sowing densities: 100, 200, 400, 500 and 700 germinal grain/ square meter. The aims were to get estimated values of the main morphological components of the seed production, its size, the amount of plants/ square meter, the number of small ears/ear, the amount of ears/square meter, the number of grains/ ear, MMB and MH. The interpretation of the figures was carried out through statistical calculations

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RESULTS AND DISCUSSIONS

Knowing the middle values of some aspects, components of grain production, according to the experimental factors taken into account, is especially interesting to define these and to realize the grain production.(Table 1)

Table 1

Approximate valuos of the main mofphological components of the seed yield of the „*Dropia*" cultivar,Leş-Bihor(2004-2006)

Sowing Period	Density b.g./mp	Plant height (cm)	Number of plants/sq m	Number of spikelets/ear	Number of ears/sq m	Number of grains/ear	Thousand-kernel weight (g)	Hectoliter weght (kg)
N_{60}								
25 IX	100	98,0±3,0	75,0±2,0	15,0±0,6	216±8	27,0±0,3	46	76
	200	97,0±3,3	139,6±5,0	13,0±2,8	312±10	27,1±0,5	46	76
	400	96,0±2,6	284,6±5,0	16,0±1,0	466±12	25,0±0,7	44	74
	500	97,0±1,6	368,8±7,0	15,0±1,3	476±10	20,0±1,0	44	75
	700	95,0±3,1	372,6±7,0	14,0±2,6	501±11	23,0±0,5	42	74
10X	100	98,0±2,6	87,3±4,0	15,0±2,0	320±7	29,0±0,5	47	74
	200	97,0±1,4	185,6±4,0	15,0±1,6	412±12	27,0±0,3	47	75
	400	97,0±2,3	345,6±6,0	14,0±1,6	502±8	27,0±0,1	45	74
	500	97,0±1,9	483,4±7,0	14,0±2,0	581±13	27,0±0,3	45	75
	700	96,0±2,4	480,5±7,0	13,0±1,8	593±15	25,0±0,3	44	73
10XI	100	93,0±4,0	86,3±4,0	15,0±2,8	613±6	26,1±0,9	47	76
	200	92,0±5,0	165,6±4,0	15,0±2,0	382±10	25,0±0,7	47	74
	400	94,0±2,3	295,6±6,0	14,0±2,0	481±12	23,0±0,8	44	76
	500	94,0±1,6	436,4±7,0	15,0±2,3	579±11	23,0±0,8	43	75
	700	92,0±4,2	417,0±7,0	13,0±1,7	563±12	21,0±0,6	43	75
N_{120}								
25IX	100	100,0±1,5	76,3±2,0	18,0±1,0	314±10	31,0±0,5	47	78
	200	98,0±2,6	143,0±3,0	17,0±1,3	330±9	29,0±1,0	47	78
	400	98,0±1,6	302,5±6,0	15,0±2,0	511±7	27,0±0,7	44	79
	500	98,0±2,0	412,3±6,0	16,0±2,5	567±12	27,0±0,5	43	77
	700	96,0±3,0	432,0±4,0	18,0±1,0	570±10	27,0±0,1	42	76
10X	100	102,0±2,3	86,4±3,0	15,0±2,5	333±12	33,0±0,3	50	80
	200	102,0±1,2	160,0±3,0	15,0±2,0	412±11	31,0±0,3	50	80
	400	100,0±2,0	360,0±2,0	14,0±2,0	601±7	29,0±0,1	49	80
	500	100,0±1,7	476,0±6,0	15,0±1,5	723±15	29,0±0,5	49	78
	700	98,0±2,6	470,0±5,0	14,0±1,8	700±14	27,0±0,3	48	78
10XI	100	98,0±2,6	73,6±8,0	18,0±1,1	320±7	29,0±0,3	47	76
	200	98,0±1,7	46,0±6,0	18,0±2,1	379±11	29,0±0,5	46	76
	400	97,0±2,0	311,0±7,0	14,0±1,1	582±14	27,0±0,5	47	77
	500	97,0±3,0	453,0±6,0	14,0±2,0	616±12	27,0±0,3	44	78
	700	95,0±3,0	444,0±5,0	14,0±1,6	600±7	25,0±0,3	44	77

The results obtained emphasize the estimated values of the main production components and its evolution manner when the technological factors interact.

The height of a plant is the main factor that affects its resistance to fall, indirectly influencing the grain production and generally the production of cereals.

Although the fact that they favor the growth (in height) of the plant is well-known, there are no obvious differences between the two agro funds. There are exceptions, to a certain extent, among the reduced sowing densities sorts (100-200 b.g./square meter), which are conditioned by the fertilizing factor and also by the enlarged space of feeding. The growth in height depends on the date of the sow and on the conditions in which the N_{120} is used, in which case the height exceeds the general size, the genetic resistance to fall of the *Dropia* sort being negatively influenced.

It has been noticed that in case of a delayed sow, occurs the reduction in size of the plant, in both cases of fertilization, probably cause by the lack of some physiological processes, due to the fact that the completion of the process occurs in autumn.

The amount of plants emerged/square meter is different, according to the three factors taken into account. Experiments show that raising the level of fertilizing influences positively the amount of plants emerged/ square meter. They also show that, for the same sowing density, the crop is better when the seeds are sowed in the optimal period.

Comparing the results of the experiments, the best results in the amount of grains harvested are when the sowing is done in the optimal period, but in the experiments at Leș-Bihor, good results were found in the case of the other periods too. However, the best percentage of emergence was realized at the density of 500-700 germinal grains/ square meter, seed in 10^{th} of October and fertilized with N_{120}/ha.

The number of little ears in an ear defines the size of the ear. Although it is believed that the number of little ears in an ear is quite stable (Săulescu 1984), our data point out that there are some differences according to certain factors. Thus, at low densities, there are more small ears in an ear, due to the extended space of nutrition. Furthermore, if the sow is delayed and the level of fertilization is high (N_{120}), there are 3-4 extra small ears, which is quite hard to explain. For the other densities, the numbers of small ears remains almost constant, no matter the fertilizer or the sowing period.

The number of ears/square meter. Among the productivity elements, the number of ears is influenced the most by the numbers of grains sown.The differences between the number of grains sown and those emerged show the union capacity of the grains(Savatti and colab. 2003)

In case there is a small density, a plant can form up to 10 unitie, whereas if the density is bigger, the union capacity decreases such that the contribution to fertile ears is minimal.(Şipoş and colab. 1981).

As a result of the effect of the shadow, the capacity of the assimilation decreases as the foliar index or the foliar surface stored during the vegetation increases. Another result is that the surviving capacity of a significant number of unities decreases. Thus, the number of ears/square meter does not increase proportionally with the number of sown grains.

To counterwork these effects the nitrogen fertilization is necessary, because high doses of nitrogen(N_{120}) favour the union of grains.

The increase of the number of ears/ square meter also depends on the sowing period, especially in case of high doses of nitrogen.

Hence, the number of fertile stems formed is influenced by the sowing period and the dosage of fertilizers used, aspect pointed out in earlier researches in our country as well.(Ionescu, Valuță, după Şipoş şi colab.1981)

The number of grains in an ear is another productivity element essential in determining the level of the grain crop. This component depends on the density of the plants. If the number of the plants increases, the number of grains in an ear decreases. However, this tendency depends on ecological factors, the sort of the plant and the fertilizing level.

The experiences done at Leş show that the agro fund and the sowing period have a less important influence over the number of grains in an ear, whereas the density of the plants is decisive.

The results show that the density of 500 germinal grains/ square meter, at both levels of fertilization, assures the optimal number of graines/ear to lead to a maximum production; in case the density is reduced, even though the number of grains is high, no economical production levels can be assured.

Thousand-kernel weight (MMB) and hectoliter weght (MH) can be considered both production components and components of the quality of the grains.

A diminishing of the MMB and MH is recorded as the effect of the shading degree and acceleration of the process that reduces the active photosinthetic foliar plot when the plant density increases. These cuts are generally conditioned by the fertilizing level.

The smallest numbers of the MMB were noticed when there was a delay of the sowing and when small doses of fertilisers were used. (N_{60}) The MH generally has the same behaviour as MMB has.

CONCLUSIONS

Applying the adequate agro-fitotechnical measures favorably conditions the maximising of the morphological elements of the production of the winter wheat *Dropia.*

The results of the experiments taking place at Leş-Bihor show that the fertilizers influence the height of the plants, the number of plants emerged and the number of ears/ sowing area. This morphological aspect of the production is highly influenced by the sowing period and especially by the sowing density.

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