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# DIALIAL ANALYSIS OF THE COMBINATION CAPACITY OF RESISTANCE TO DISEASES AND PESTS OF THE SOURCE SELECTION CORN MATERIAL

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*According to the first method of the first Griffing model, the system of crosses included, according to the evaluation presented in the previous sections, 8 self-pollinated lines of corn (F 502, UH 405, CM 5-1-1, MA 22, UHC 409, CO 255, KL 17, CO 108), which were characterized by different indicators of grain yield, resistance to pests and the length of the growing season. Total genotypic variability was divided into components that are due to general and specific combination ability, as well as reciprocal effects. In terms of resistance to damage by the corn borer, the best combination ability was found in lines F502, CM 5-1-1, UH 405 and UHC 409, which were marked by negative values of the effects of total combination ability.*

*According to our research, the UHC 409, CO 108, MA 22 and F 502 lines, which had negative values of the effects of hall combinatorial ability over the years of research, were noted for the best resistance in terms of combinatorial ability to be affected by vesicular smut. In terms of resistance to flying smut, self-pollinated lines with high negative values of the effects of hall combination ability - CM 5-1-1, CO 108, UHC 409, MA 22, F 502 and UH 405. As shown and evidenced by the results of comparing the obtained values of the effects of the total combination capacity of self-pollinated lines on resistance to pest damage and disease with the values of the effects of the total combination capacity on grain yield, it is advisable to note such self-pollinated lines as UH 405, F 502 and CM 5-1- 1. These lines combine the negative values of the effects of the hall combination ability on pest damage and disease with high positive effects of the hall combination ability.*

***Key words:*** *general combining ability, specific combining ability, resistance to diseases and pests, self - pollinated corn lines, diallel crosses,*

***Tabl. 4. Lit.15.***

**Statement of the research problem.** Genetic aspects of the manifestation of valuable economic traits and properties, in particular grain yields and resistance to pests, can be analyzed to a greater extent through diallel crosses. Crossing of self-pollinated lines, which differ in the value of the studied indicator, provides determination of their combination ability, ie genotypic possibility of realization of the heterosis effect.

**Analysis of recent research and publications.** Analysis of the genetic structure of general combinatorial ability (GCA) and specific combinatorial ability (SCA) suggests

that in the absence of epistasis, GCA is due to the additive and moderately dominant type of gene action, while SCA is superdominant. In the presence of epistasis it is possible to expect that both types of combinatorial ability contain an epistatic part: in GCA the average epistatic effect enters, and in SCA - the epistatic effect connected with separate hybrid combinations, state N.V. Turbin, L.V. Khotileva, L.A. Tarutina [1], I.P. Chuchmiya [2], O.M. Kolisnyk [4].

According to the same authors, GCA expresses the average variability of the genotype in hybrid combinations, and SCA is used to characterize individual combinations when they are better or worse than the average of the parental forms.

Therefore, due to the comparison of the values of GCA and SCA, it is possible to determine the type of gene interactions that control certain traits, which allows the selection of starting material for the selection of hybrid combinations with the desired properties.

**Presentation of the main research material.** To ensure the significance of the genetic study of the combination value of the source material, the analysis of the combination ability should include the evaluation of self-pollinated lines of corn with contrasting indicators. According to the 1st method of the first Griffing model [1], the system of crosses included, according to the evaluation presented in the previous sections, 8 self-pollinated lines of corn (F 502, UH 405, CM 5-1-1, MA 22, UHC 409, CO 255, KL 17, CO 108), which were characterized by different indicators of grain yield, resistance to pests and the length of the growing season [4-8].

Dispersion analysis of resistance to pests and diseases of hybrid combinations, in table. 1 showed that in this group there are significant genotypic differences in the studied indicators. The obtained results allow the analysis of SCR and SCR in self-pollinated lines used in crosses.

*Table 1*

**Analysis of variance of maize hybrids by pest damage and affected by diseases**

| Source of variation | Criterion F | | | Sum of squares | Middle square | Number of degrees of freedom |
|---|---|---|---|---|---|---|
| | actual | table | | | | |
| | | 0,05 | 0,01 | | | |
| Smuts | | | | | | |
| Random deviations | – | – | – | 346,901<br>411,340 | 1,840<br>2,181 | 189,1<br>189,0 |
| Repetition | 1,381<br>0,951 | 2,651<br>2,650 | 2,701<br>2,700 | 7,650<br>6,261 | 2,551<br>2,080 | 3,0<br>3,0 |
| Hybrids | 39,881<br>33,471 | 1,381<br>1,380 | 1,480<br>1,481 | 4674,190<br>4589,951 | 73,190<br>72,851 | 63,0<br>63,0 |
| General | – | – | – | 5028,741<br>5007,550 | – | 255,0<br>255,0 |

*Continuation of Table 1*

| | | | | | | |
|---|---|---|---|---|---|---|
| orn smuts | | | | | | |
| Random deviations | – | – | – | 536,250<br>717,221 | 2,840<br>3,790 | 189,0<br>189,0 |
| Repetition | 0,271<br>0,750 | 2,650<br>2,650 | 2,701<br>2,700 | 2,381<br>8,590 | 0,790<br>2,861 | 3,0<br>3,0 |
| Hybrids | 45,821<br>82,260 | 1,381<br>1,380 | 1,480<br>1,480 | 8198,241<br>19643,900 | 130,130<br>311,801 | 63,0<br>63,0 |
| General | – | – | – | 8736,870<br>20369,700 | – | 255,0<br>255,1 |
| Corn borer | | | | | | |
| Random deviations | – | – | – | 371,860<br>973,570 | 1,960<br>5,150 | 189,0<br>189,0 |
| Repetition | 1,050<br>1,080 | 2,650<br>2,650 | 2,701<br>2,700 | 6,220<br>16,750 | 2,070<br>5,580 | 3,0<br>3,0 |
| Hybrids | 103,350<br>39,471 | 1,380<br>1,380 | 1,480<br>1,480 | 12762,510<br>12807,010 | 202,570<br>203,280 | 63,0<br>63,0 |
| General | – | – | – | 13140,590<br>13797,331 | – | 255,0<br>255,0 |
| Fruit fly | | | | | | |
| Random deviations | – | – | – | 536,240<br>836,340 | 2,840<br>4,420 | 189,0<br>189,0 |
| Repetition | 1,400<br>0,870 | 2,650<br>2,650 | 2,700<br>2,700 | 11,920<br>11,601 | 3,970<br>3,860 | 3,0<br>3,0 |
| Hybrids | 120,330<br>85,561 | 1,380<br>1,381 | 1,480<br>1,480 | 21506,980<br>23825,961 | 341,380<br>378,180 | 63,0<br>63,0 |
| General | – | – | – | 22055,140<br>24673,901 | – | 255,0<br>255,0 |

Source: formed on the basis of own research

Analysis of the values of the mean squares of the total and specific combination ability for diseases of hybrid combinations showed that in this group there are significant genotypic differences in the studied parameters.

The obtained results allow the analysis of GCA and SCA in self-pollinated lines used in crosses (Table 2).

The values of the mean squares of the total and specific combination ability for resistance to pests, which were taken into account according to the method of determining GCA and SCA in corn [1, 9, 14].

Thus, the total genotypic variability was divided into components that are due to the general and specific combination ability, as well as reciprocal effects.

According to the results of research by I.P. Chuchmiya [2], resistance to damage by the corn borer, the defeat of the bubble smut and the flying smut is inherited polygenically by additive and non-additive gene action. The reliability of the reciprocal effect on all the studied properties indicates the need for reciprocal analysis of the selection of parental forms for hybridization.

*Table 2*

**Dialial analysis of self-pollinated corn lines by damage pests and diseases**

| Source of variation | Criterion F | | | Middle square | Sum of squares | Number of degrees of freedom |
|---|---|---|---|---|---|---|
| | actual | table | | | | |
| | | 0,05 | 0,01 | | | |
| Smuts | | | | | | |
| Reciprocal differences | 26,990 | 1,560 | 1,980 | 12,380 | 346,871 | 28,0 |
| | 24,780 | 1,560 | 1,980 | 13,480 | 377,610 | 28,0 |
| GCA | 233,470 | 2,070 | 2,820 | 107,130 | 749,940 | 7,0 |
| | 5,580 | 2,070 | 2,820 | 97,870 | 685,111 | 7,0 |
| SCA | 179,870 | 1,560 | 1,980 | 2,560 | 71,730 | 28,0 |
| | 5,560 | 1,560 | 1,980 | 3,030 | 84,770 | 28,0 |
| Corn smuts | | | | | | |
| Reciprocal differences | 12,210 | 1,560 | 1,980 | 8,660 | 242,640 | 28,0 |
| | 17,061 | 1,560 | 1,980 | 16,190 | 453,340 | 28,0 |
| GCA | 319,080 | 2,070 | 2,820 | 226,330 | 1584,380 | 7,0 |
| | 603,540 | 2,070 | 2,820 | 572,580 | 4008,120 | 7,0 |
| SCA | 11,200 | 1,560 | 1,980 | 7,940 | 222,540 | 28,0 |
| | 16,920 | 1,560 | 1,980 | 16,050 | 449,520 | 28,0 |
| Fruit fly | | | | | | |
| Reciprocal differences | 30,720 | 1,560 | 1,980 | 21,790 | 610,120 | 28,0 |
| | 25,910 | 1,560 | 1,980 | 28,660 | 802,581 | 28,0 |
| GCA | 892,770 | 2,071 | 2,820 | 633,251 | 4432,770 | 7,0 |
| | 620,720 | 2,071 | 2,820 | 686,681 | 4806,791 | 7,0 |
| SCA | 16,800 | 1,560 | 1,980 | 11,920 | 333,850 | 28,0 |
| | 11,200 | 1,560 | 1,980 | 12,390 | 347,120 | 28,0 |
| Corn borer | | | | | | |
| Reciprocal differences | 14,720 | 1,560 | 1,980 | 7,241 | 202,860 | 28,0 |
| | 5,210 | 1,560 | 1,980 | 6,710 | 188,120 | 28,0 |
| GCA | 807,100 | 2,070 | 2,820 | 396,990 | 2778,950 | 7,0 |
| | 311,650 | 2,070 | 2,820 | 401,340 | 2809,440 | 7,0 |
| SCA | 15,160 | 1,560 | 1,980 | 7,451 | 208,820 | 28,0 |
| | 5,660 | 1,560 | 1,980 | 7,291 | 204,190 | 28,0 |

Source: formed on the basis of own research

We found [3-5, 10-13, 15] that lines with a positive value of the sign of SCA are characterized by low resistance to disease and pest damage, and lines with a negative value - high resistance. The values of the effects of the general and the variance of the specific combination ability according to the studied indicators are given in table. 3. and 4.

*Table 3*

**Estimation of general effects (gi) and specific variant ($\sigma^2_{si}$) combinatorial ability of self-pollinated lines for damage**

| Self-pollinated lines | GCA | | | | | | | | SCA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2019 p. | | | | 2020 p. | | | | 2019 p. | | | | 2020 p. | | | |
| | Corn borer | | Fruit fly | | Corn borer | | Fruit fly | | Corn borer | | Fruit fly | | Corn borer | | Fruit fly | |
| | gi | rank | gi | rank | gi | rank | gi | rank | $\sigma^2_{si}$ | rank | $\sigma^2_{si}$ | rank | $\sigma^2_{si}$ | rank | $\sigma^2_{si}$ | rank |
| F502 | -4,68 | 1 | -3,87 | 4 | -3,95 | 3 | -5,02 | 1 | 4,7 | 2 | 3,96 | 5 | 5,77 | 1 | 2,69 | 7 |
| UH 405 | -4,14 | 3 | -1,53 | 5 | -4,73 | 1 | -1,62 | 5 | 2,7 | 6 | 1,64 | 8 | 1,06 | 6 | 0,46 | 8 |
| CM 5-1-1 | -4,52 | 2 | 0,06 | 6 | -4,62 | 2 | -0,18 | 6 | 2,23 | 7 | 2,48 | 7 | 0,12 | 8 | 3,84 | 4 |
| MA 22 | 1,96 | 5 | -4,28 | 2 | 1,97 | 6 | -3,27 | 4 | 1,17 | 8 | 4,36 | 4 | 0,71 | 7 | 3,0 | 6 |
| UHC409 | -3,84 | 4 | -4,08 | 3 | -3,57 | 4 | -4,12 | 3 | 4,82 | 1 | 5,59 | 2 | 4,52 | 2 | 4,73 | 2 |
| CO 255 | 2,05 | 6 | 13,26 | 8 | 1,77 | 5 | 14,1 | 8 | 3,5 | 4 | 16,44 | 1 | 3,33 | 3 | 18,9 | 1 |
| KL17 | 5,02 | 7 | -4,73 | 1 | 4,31 | 7 | -4,77 | 2 | 3,18 | 5 | 5,4 | 3 | 2,63 | 4 | 4,67 | 3 |
| CO 108 | 8,14 | 8 | 5,16 | 7 | 8,82 | 8 | 4,91 | 7 | 4,2 | 3 | 2,97 | 6 | 2,21 | 5 | 3,71 | 5 |
| $HIP_{0,05}$ | 0,32 | | 0,38 | | 0,52 | | 0,48 | | | | | | | | | |
| $HIP_{0,01}$ | 0,42 | | 0,51 | | 0,68 | | 0,63 | | | | | | | | | |
| $\sigma^2$ si | | | | | | | | | 3,3 | | 5,35 | | 2,54 | | 5,25 | |

Source: formed on the basis of own research

It should be noted that the stability of resistance to damage by both pests and diseases (by the size of the difference in ranks) in some self-pollinated lines, although available, but somewhat variable. This indicates a different effect of disease expression and pest damage of parental forms and hybrid offspring, depending on changes in weather conditions over the years of research. In general, genotype-environmental interaction from the standpoint of the implementation of signs of resistance to pests and diseases is the most vulnerable aspect of the reliability of the search for self-pollinated lines as donors of resistance to diseases and pests, as phytophages and phytopathogens are closely related to both hydrothermal and development of the lines and hybrids of corn.That is why the urgent task in selection practice from the standpoint of creating resistant to pests and diseases hybrids is the maximum separation of the properties of the genotype from its response to changing growing conditions to identify stable and adapted donors of such resistance.

Analyzing the data in table. 3, it should be noted that the best combination ability in terms of resistance to damage by the corn borer was found in lines F502, CM 5-1-1, UH 405 and UHC 409, which were marked by negative values of the effects of GCA. Self-pollinated lines CO 108, KL 17, CO 255 and MA 22 were characterized by high positive values of the effects of SCA, so the resistance to damage by corn stem butterfly of simple hybrids obtained with these lines was low.

Lines CM 5-1-1 and UH 405, characterized by negative values of the effects of SCR and a slight variation of SCR in terms of resistance to damage by this pest, it is most appropriate to use to create hybrids with high resistance to corn borer.

High values of SCR in corn borer damage have been established in self-pollinated lines F 502 and UHC 409. The use of these lines in crosses provides hybrid combinations with both high and low resistance.

Regarding the resistance to damage by the fruit fly, it is necessary to note the lines KL 17, MA 22, UHC 409, F 502 and UH 405, which were characterized by high combination ability according to this indicator. In turn, self-pollinated lines CO 255, CO 108 and CM 5-1-1 over the years of research had low CPR rates.

Lines MA 22, F 502 and UH 405, which differed in negative values of the effects of SCA and a slight variation of GCA in terms of resistance to damage by the fruit fly, are best used to create hybrids with high resistance to this pest. Self-pollinated lines with high negative values of SCA - KL 17 and UHC 409 had a high variance of SCA. That is why, in crosses with their participation, the determining factor in the formation of resistance to the fruit fly, along with high values of SCA, is also a specific combination of its manifestation, ie greater or lesser its value in individual hybrid combinations.

According to our studies, the UHC 409, CO 108, MA 22 and F 502 lines, which had negative values of the effects of SCA over the years of research, were noted for their combination ability with better resistance to vesicular smut damage (Table 4). The self-pollinated CO 255 line was characterized by positive values of the effects of CKD, so the resistance to vesicular smut in hybrids obtained with this line was low. UHC 409 and CO 108 lines are characterized by negative values of the effects of SCA and a slight variation of SCA in resistance to vesicular smut, so it is advisable to use them when creating disease-resistant hybrids. According to the results of our research, self-pollinated lines with high negative values of GCA effects - CM 5-1-1, CO 108, UHC 409, MA22, F 502 and UH 405 - were distinguished for their resistance to smut damage. Self-pollinated CO 255 and KL 17 lines were characterized by positive values of CKD effects, so resistance to smut infestation in hybrids obtained with these lines was average. Lines CM 5-1-1, CO108, F 502 and UH 405 were marked by negative values of the effects of SCR and a slight variation of SCR in resistance to smut, which ensures their use in the creation of disease-resistant hybrids. Conclusions and prospects for further research. Thus, over the years of research on the complex resistance to pest damage and disease, self-pollinated lines UH 405, F 502 and UHC 409 have emerged, which were characterized by high effects of GCA on the pathogens studied. The self-pollinated line CM 5-1-1 should also be noted for resistance to corn borer and flying smut, and the line MA 22 for resistance to the fruit fly, corn fly and smut.

Thus, despite the significant loss of grain yield from the negative effects of pests, the share of genotypic conditionality of grain productivity for each particular

*Table 4*

**Estimation of effects of general (gi) and variance of specific ($\sigma^2_{si}$) combinatorial ability of self-pollinated lines affected by disease**

| Self-pollinated lines | SCA | | | | | | | | GCA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2019 | | | | 2020 | | | | 2019 | | | | 2020 | | | |
| | Corn smuts | | Smuts | | Corn smuts | | Smuts | | Corn smuts | | Smuts | | Corn smuts | | Smuts | |
| | $\sigma^2_{si}$ | rank | $\sigma^2_{si}$ | rank | $\sigma^2_{si}$ | rank | $\sigma^2_{si}$ | rank | gi | rank | gi | rank | gi | rank | gi | rank |
| CO 108 | 2,6 | 6 | 1,3 | 3 | 5,4 | 5 | 1,1 | 4 | -1,7 | 2 | -2,3 | 1 | -1,67 | 4 | -1,34 | 3 |
| CM5-1-1 | 1,2 | 8 | 0,1 | 8 | 1,6 | 8 | 0,02 | 8 | -0,2 | 6 | -1,7 | 2 | -1,04 | 6 | -1,75 | 1 |
| KL17 | 2,6 | 6 | 1,3 | 3 | 5,4 | 5 | 1,1 | 4 | -0,3 | 5 | 6,02 | 8 | -1,68 | 3 | 5,82 | 8 |
| MA 22 | 4,3 | 2 | 1,6 | 1 | 5,8 | 4 | 1,9 | 1 | -1,4 | 3 | -0,58 | 4 | -2,4 | 2 | -0,66 | 5 |
| CO 255 | 5,8 | 1 | 1,4 | 2 | 20,9 | 1 | 1,8 | 2 | 8,7 | 8 | 0,70 | 7 | 14,35 | 8 | 0,72 | 7 |
| UHK409 | 3,7 | 5 | 1,2 | 4 | 3,5 | 6 | 1,6 | 3 | -4,2 | 1 | -1,08 | 3 | -5,45 | 1 | -1,5 | 2 |
| UH 405 | 1,6 | 7 | 0,5 | 7 | 3,0 | 7 | 0,6 | 6 | 0,06 | 7 | -0,56 | 5 | -0,90 | 7 | -0,90 | 4 |
| F502 | 3,8 | 4 | 0,6 | 5 | 10,5 | 2 | 1,0 | 5 | -0,89 | 4 | -0,52 | 6 | -1,22 | 5 | -0,42 | 6 |
| $HIP_{0,01}$ | | | | | | | | | 0,50 | | 0,39 | | 0,58 | | 0,44 | |
| $HIP_{0,05}$ | | | | | | | | | 0,38 | | 0,30 | | 0,44 | | 0,33 | |
| $\sigma 2_{si}$ | 3,4 | | 0,9 | | 7,2 | | 1,04 | | | | | | | | | |

Source: formed on the basis of own research

breeding form did not exceed the parameters of the range of values of breeding samples over the years of research. It is necessary to pay attention once again to the importance of the influence of specific combination ability on the manifestation of grain productivity of the selected breeding material, because its role in the expression of this property is significant and exceeds for all samples of variants GCA.

Thus, the study of the combinatorial ability of the source material of corn for resistance to diseases and pests, allowed to identify breeding samples that optimally combine these features necessary for practical breeding.

According to the results of comparing the obtained values of the effects of self-pollinated lines on resistance to pest damage and disease with the values of the effects of soil on grain yield, it is advisable to note such self-pollinated lines as UH 405, F 502 and CM 5-1-1. These lines combine the negative values of the effects of GCA on pest damage and disease with high positive effects of GCA on grain productivity in monoculture. The UHC 409 line, despite the negative values of the effects of the overall combination ability on productivity, is still valuable as a resistant form to diseases and pests, this line can be used for saturating crosses, to transfer valuable characteristics of resistance to pathogens to different productive samples.

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## *АНОТАЦІЯ*

## *ДІАЛЕЛЬНИЙ АНАЛІЗ КОМБІНАЦІЙНОЇ ЗДАТНОСТІ СТІЙКОСТІ ДО ХВОРОБ ТА ШКІДНИКІВ ВИХІДНОГО СЕЛЕКЦІЙНОГО МАТЕРІАЛУ КУКУРУДЗИ*

*Відповідно до першого методу першої моделі Гріффінга, в систему схрещувань входило, за результатами оцінки було включено 8 самозапилених ліній кукурудзи (F 502, УХ 405, СМ 5-1-1, МА 22, УХК 409, СО 255, KL 17, СО 108), які характеризувались різними показниками врожайності зерна, стійкості до шкодочинних організмів та тривалості вегетаційного періоду. Загальна генотипова мінливість була розділена на компоненти, які обумовлені загальною та специфічною комбінаційною здатністю, а також реципропними ефектами. За стійкістю до пошкодження кукурудзяним метеликом кращу комбінаційну здатність, встановлено у ліній F502, СМ 5-1-1, УХ 405 та УХК 409, які відзначались від'ємними значеннями ефектів загальної комбінаційної здатності. Кращою стійкістю за комбінаційною здатністю до ураження пухирчастою сажкою, відповідно до наших досліджень, відзначались лінії УХК 409, СО 108, МА 22 та F 502, які мали від'ємні значення ефектів зальної комбінаційної здатності за роки досліджень. За стійкістю до ураження летючою сажкою, виділилися самозапилені лінії з високими від'ємними значеннями ефектів зальної комбінаційної здатності – СМ 5-1-1, СО 108, УХК 409, МА 22, F 502 та УХ 405. Як показали та свідчать результати порівняння отриманих значень ефектів загальної комбінаційної здатності самозапилених ліній за стійкістю до пошкодження шкідниками та ураженістю хворобами із значеннями ефектів загальної комбінаційної здатності за врожайністю зерна, доцільно відмітити такі самозапилені лінії, як УХ 405, F 502 та СМ 5-1-1.Ці лінії поєднують від'ємні значення ефектів зальної комбінаційної здатності за пошкодженістю шкідниками та ураженістю хворобами із високими позитивними ефектами зальної комбінаційної здатності за урожайнісю зерна.*

***Ключові слова:*** *загальна комбінаційна здатність, специфічна комбінаційна здатність, стійкість до хвороб та шкідників, самозапилені лінії кукурудзи, діалельні схрещування.*

***Табл.4. Літ.15.***

## *АННОТАЦИЯ*

## *ДИАЛЕЛЬНИЙ АНАЛИЗ КОМБИНАЦИОННОЙ СПОСОБНОСТИ УСТОЙЧИВОСТИ К БОЛЕЗНЯМ И ВРЕДИТЕЛЯМ ИСХОДНОГО СЕЛЕКЦИОННОГО МАТЕРИАЛА КУКУРУЗЫ*

*Согласно первому методу первой модели Гриффинга, в систему скрещиваний входило, по результатам оценки 8 самоопылённых линий кукурузы (F 502, УХ 405, СМ 5-1-1, МА 22 УХК 409, СО 255, KL 17 , СО 108), которые характеризовались различными показателями урожайности зерна, устойчивости к вредоносным организмам и продолжительности вегетационного периода. Общая генотипическая изменчивость была разделена на компоненты, которые обусловлены общей и специфической комбинационной способностью, а также реципрокными эффектами. По устойчивости к повреждению кукурузным мотыльком лучшую комбинационную способность, установлено в линий F 502, СМ 5-1-1, УХ 405 и УХК 409, которые отличались отрицательными значениями эффектов общей комбинационной способности.*

*Лучшей устойчивостью по комбинационной способности к поражению пузырчатой головней, согласно нашим исследованиям, отличились линии УХК 409, СО 108, МА 22 и F 502, которые имели отрицательные значения эффектов общей комбинационной способности за годы исследований. По устойчивости к поражению летящей головней, выделились самоопылённые линии с высокими отрицательными значениями эффектов общей комбинационной способности - СМ 5-1-1, СО 108, УХК 409, МА 22, F 502 и УХ 405.*

*Как показали результаты сравнения полученных значений эффектов общей комбинационной способностью самоопылённых линий по устойчивости к повреждению вредителями и болезнями со значениями эффектов общей комбинационной способностью по урожайности зерна, целесообразно отметить такие самоопылённые линии, как УХ 405, F 502 и СМ 5-1- 1. Эти линии сочетают отрицательные значения эффектов зобщей комбинационной способности по поврежденностью вредителями и пораженностью болезнями с высокими положительными эффектами общей комбинационной способности.*

***Ключевые слова:*** *общая комбинационная способность, специфическая комбинационная способность, устойчивость к болезням и вредителям, самоопылённые линии кукурузы, диалельные скрещивания.*

***Табл.4. Лит.15.***

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