

INTERDEPENDENCE OF SEVERAL CHARACTERISTICS AND THEIR INFLUENCE ON THE OIL YIELD WITH SUNFLOWER HYBRIDS

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SUMMARY

The interdependence of yield components (seed yield, oil content, diameter of head, 1000 seed mass and unfecund heads), climatic factors in the flowering - maturity stage (rainfall, relative air humidity and total of effective temperature), white rot with sunflower (*Sclerotinia sclerotiorum*, form of head and stalk) and their influence on oil yield had been examined and presented in this study.

The investigations were carried on the fields of Aleksa Šantić in 1980, 1981. and 1982. Three NS-sunflower hybrids had been tested: NS-H-26 RM, NS-H-10 and NS-H-62 RM.

Variability of the examined characteristics was determined by means of mean values, standard deviations and coefficients of variation.

The interdependence of ten characteristics was established by simple coefficient of correlation.

Dependence of oil yield upon these characteristics was found by means of determination coefficient, regression equation, simple coefficients of correlation and path coefficients.

Based on the investigation of interdependence of several characteristics and their influence on the oil yield per hectare, with three sunflower hybrids the following may be concluded:

The largest coefficient of variation was found with white rot of head (95.5%), unfecundated heads (82.74%) and the quantity of rain during flowering - maturity stage (50.53%).

Oil content and head diameter are in negative correlation ( $r = -0.766^{++}$  and  $r = -0.488^+$ ), while mass of 1000 seed and seed yield are in a slight negative correlation with the quantity of rain in flowering - maturity stage ( $r = -0.230$  and  $r = -0.351$ ).

Seed oil content is in a considerable negative correlation ( $r = -0.470^+$ ) while seed yield, mass of 1000 seeds and head diameter are in a weak negative correlation with air humidity in flowering - maturity stage ( $r = -0.057$ ,  $r = -0.01$  and  $r = -0.344$ ).

Seed yield, oil content, mass of 1000 seeds and head diameter are in positive correlation with the total of effective temperatures in flowering - maturity stage ( $r = 0.397^+$ ,  $r = 0.136$ ,  $r = 0.140$  and  $r = 0.459^+$ ).

Strong positive correlation was found between white rot of stalk and oil content ( $r = 0.449^+$ ) and strong negative correlation between white rot of head and oil content ( $r = -0.669^{++}$ ).

Strong positive correlation was found between white rot of head and rainfall ( $r = 0.838^{++}$ ) and between white rot of head and relative air humidity in flowering - maturity stage ( $r = 0.717^{++}$ ).

Ten characteristics influencing oil yield had been examined and reported in this study. The degree of their influence can be realized through coefficient of determination ( $R^2 = 0.99$ ).

The total effects of the examined characteristics: seed yield, oil content, mass of 1000 seeds and head diameter, on the oil yield are very significant and positive ( $r = 0.806^{++}$ ,  $r = 0.603^{++}$ ,  $r = 0.788^{++}$  and  $r = 0.699^{++}$ ).

The total effect of the quantity of rainfall during flowering - maturity stage on the oil yield is significant and negative ( $r = -0.551^+$ ) while the total effect of effective temperatures in the flowering - maturity stage is positive ( $r = 0.353$ ).

Positive effect of seed yield, seed oil content and the total of effective temperatures on oil yield is also confirmed by regression equation ( $\hat{y} = -8.842 + 27.8^{++} + 8.57^{++} + 2.02^{++}$ ).

The largest direct positive effect on oil yield was achieved through seed yield (0.772) and seed oil content (0.314). The direct effects of other characteristics are positive or negative but insignificant.

The largest indirect positive and negative effects on oil yield were realized through seed yield and seed oil content.