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EFFECT OF ECOLOGICAL CONDITIONS ON THE REPRODUCTIVE CAPACITY OF SUNFLOWER SEED

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Sunflower oil is the most best plant-derived oil for the consumption of the contemporary human. The international trend of sunflower yield increase per unit area lags behind the demand for sunflower oil. It is thus necessary to increase the global sunflower acreage by introducing sunflowers to new production regions. In addition to commercial production, it is important to estimate possibilities of sunflower seed production in these new regions. It further calls for investigations of the reaction of the currently used genotypes to differento ecological conditions. This investigation was concerned with the effects of temperature and relative air humidity in the course of plant ontogeny on the dynamics of water content, reproductive capacity, and the period of post-harvest maturation of sunflower seed.

A two-year investigation was conducted in seed plots of sunflower hybrids NS-H-26-RM and NS-H-27-RM and the variety VNIIMK-8931 Comparative experiments were established in field and in a greenhouse where the temperature was higher and the relative air humidity much lower in relation to the field conditions. The dynamics of flowering (the outermost ring of florets) was flollowed daily by labelling togehter the plants which flowered on the same day. The experimental plants were harvested at 3-day intervals starting on the 10th day after the beginning of flower ; the seeds from the 15th harvest were thus collected 52 days after the beginning of flower. To establish the period of post-harvest maturation, germination energy and capacity of air dry seeds were tested after the standard method on filter paper (ISTA 1976) in 9 turns from the beginning of the harvesting (from the 15th to the 100th day).

The reduction of water content in seed (Graphs 1 and 2) followed the pattern of linear regression, the daily reductions in the field and the greenhouse being -1.82% (r= -0.998) and -2.15% (r= -0.975), respectively. The year also affected this parameter, the average daily reductions in 1983 and 1984 being -1.87% (r= -0.993) and -2.06% (r= -0.989), respectively. The effect of the genotype is not discussed in this paper.

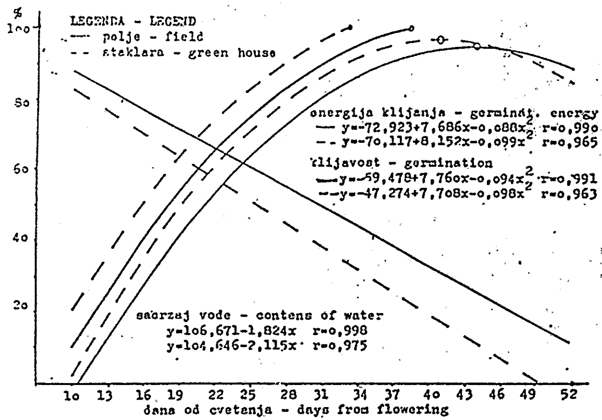
The dynamics of reproductive capacity (Graphs 1 and 2) followed the pattern of square regression (r= 0.963 - 0.991). The calculated maximum germination energy in the seeds from the field and the greenhouse was attained on the 44th and the 41st day after the beginning of flower, respectively. The respective values for the germination capacity were reached on the 38th and the 32nd day. The effect of the year was low because the maximum germination energy and capacity of seed occured on the 36th day for the capacity.

This effect of ecological factors on the period of post-harvest maturation (Graphs 3 and 4) followed the pattern of square regression (r= 0.918 - 0.961). The maximum germination energy in the seeds from the field and the greenhouse was attained on the 78th and the 74th days after the harvest, respectively. The respective values for the germination capacity were reached on the 76th and the 72nd day. The year exhibited a low effect on these two parameters. The maximum germination energy in 1983 and 1984 was reached on the 76th and the 74th days after the harvest, respectively. The respective values for the germination capacity were reached on the 75th and the 73rd day.

High temperature and relative air humidity accelerate the maturation of sunflower seeds with respect to all three parameters. The moisture release is 0.3% faster in the greenhouse than in the field. Therefore, the seeds from the green-

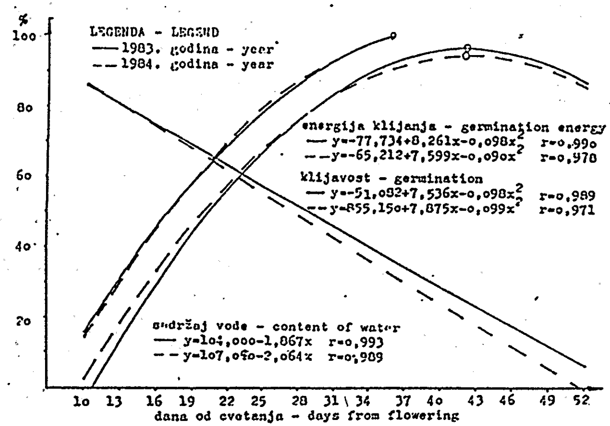
GRAF. 1 Uticaj ekoloških faktora na dinamiku sazrevanja zrna suncokreta

The influence of ecological conditions on dynamic of maturity of sunflower seed



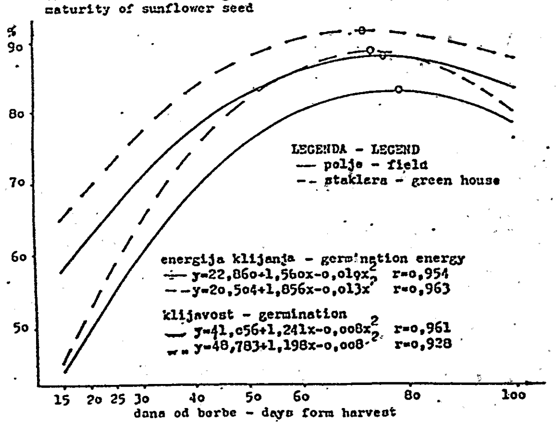
GRAF. 2 Uticaj godine na dinamiku sazrevanja zrna suncokreta

The influence of year on dynamic of maturity of sunflower seed



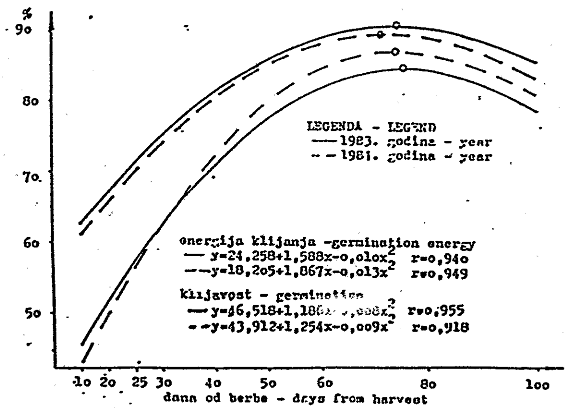
GRAF. Uticaj ekoloških uslova na dinamiku posležetvenog dozrevanja zrna suncokreta

The influence of ecological conditions on dynamic post harvest maturity of sunflower seed



GRAF. 4 Uticaj godine na dinamiku posležetvenog dozrevanja krna suncokreta

The influence oc year on dynamic post harvest maturity of sunflower



house than in the field. Therefore, the seeds from the grrenhouse reach the maximum quality 3 to 6 days earlier and their period of post-harvest maturation is 4 days shorter.

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