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HYBRID COMBINATIONS OF *Salvia sclarea* L., RESISTANT TO ENVIRONMENTAL CONDITIONS

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The breeding research conducted on *Salvia sclarea* L. species aims to create and improve the initial breeding material, new hybrid combinations that are resilient to environmental conditions, flowering in the first and second year of vegetation, which would synthesize and accumulate a higher content of superior-quality essential oil.

As biological material 28 hybrid combinations (F_3-F_4 generations) of *Salvia sclarea*, including simple, triple, double, stepped, and complex were used. The evaluated hybrid combinations are distinguished by high productivity, which is ensured by quantitative directly influence productivity: plant height, inflorescence length, number of inflorescence branches and essential oil content. Even in dry years, these genotypes are distinguished by well-developed plants with tall, long and very long, compact inflorescences, due to the high number of first and second order branches. The evaluation of these hybrids demonstrated that the plants produced floral stems ranging in height from 107.3 cm to 139.0 cm. It should be noted that the most highly developed plants were observed in the complex hybrid [(Cr.p.1 S_1 x M-69)F_{12} x (S-3 x M -69)F_2 x Cr.p.1 S_2)F_8]F_4; this hybrid was also distinguished by vigorous inflorescences, which measured 71.6 cm in length.

One of the basic criteria in clary sage breeding is the development of varieties and hybrids featuring vigorous inflorescences with a high number of branches. Both first- and second-order inflorescence branches influences the production of raw material and essential oil content, as the oil glands in *sage* are exogenous located on the epidermis of the inflorescence branches and on the fused sepals of the flowers. The inflorescences of the evaluated hybrids are compact, with a substantial number of first and second-order branches. The highest number of first and second order inflorescence branches was recorded for the stepwise hybrid combination [(0-42 x Rubin) F_1 x S-786)BC_7 x AP60-11 S_3)]F_3 (56.9 branches) and the single hybrid (Cr. p 99 S_{13}

x AP 52-11 S_3)F_3 (69.8 branches). All these evaluated traits - characterized by high to very high quantitative values - as well as other genetic attributes of the evaluated hybrids, ensure the synthesis and accumulation of high essential oil content even during dry years, as the oil glands in this species are located on the epidermis of the inflorescences (branches, flowers, and calyxes).

As a result of the conducted research it was demonstrated that regarding the very high essential oil content recalculated to dry matter: (1.404-1.999%), 12 hybrids stood out. The single hybrid (Cr.p 99 S_{13} x AP 52-11 S_3)F_3 stood out exceptionally, synthesizing and accumulating a very high essential oil content of 2.470%.

In conclusion, the created and evaluated hybrid combinations constitute on important breeding material and present a valuable source of germplasm for the development of new hybrid varieties of *Salvia sclarea* L., resistant to environmental conditions.

Keywords: essential oil, hybrid combinations, quantitative characters, *Salvia sclarea* L.

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