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ZAHAREL – A NEW SWEET SORGHUM VARIETY

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The trend of global warming, accompanied by an increasing frequency of drought years characterized by high temperatures and soil moisture deficits, highlights the relevance of expanding sorghum cultivation to produce animal feed (compound feed, fresh forage, silage, hay, haylage), gluten-free food products (groats, semolina, flour), various solid (briquettes, pellets) and liquid (bioethanol, biopetrol, biodiesel) energy sources, food- and feed-grade glucose syrups, as well as ecofriendly fertilizers such as biochar, urea, and ammonia. Sorghum crops are of immense importance in human nutrition and animal husbandry. Sweet sorghum stalks, for instance, contain up to 20% sugar, so the crop is used to produce syrup from the juice extracted by pressing. The syrup obtained in this way is far more beneficial than sugarcane or sugar beet syrup because it contains fructose and glucose, whereas sugar beets and sugarcane contain only sucrose. Regarding livestock farming, it is important to note that silage accounts for up to 50% or more of the total cattle feed in terms of nutritional value. Silage made from sweet sorghum and sorghum-Sudan grass hybrids is produced by harvesting the stalks of these crops during the grain-ripening stage, when the forage mass contains the highest level of dry matter, a high yield of feed units, and an optimal moisture content (approximately 70%). To rectify the situation, breeders are tasked with developing new sorghum hybrids and varieties adapted to current conditions. To this end, a new sweet sorghum variety has been created that surpasses previously developed hybrids in terms of valuable agronomic traits. The sweet sorghum hybrid population MK 46 was used as the starting material; it is characterized by a plant height of 215–230 cm and 12–15 nodes. The panicle fully emerges from the flag leaf sheath and reaches a length of 13–20 cm. It is compact to semi-compact and elongated-cylindrical, with light pink spikelet glumes showing slight pubescence at maturity. The grain is oval-shaped, variable in color, and has a starchy endosperm. Grain yield reaches up to 2.0–2.3 t/ha.

The Zaharrel sweet sorghum variety originated from individual selections and self-pollinations carried out within the 'MK 46' sweet sorghum hybrid population. Taxonomically, the Zaharrel variety belongs to the sweet sorghum species *Sorghum × drummondii (Steud.) Millsp. & Chase.* The growing season lasts 110–115 days. The plant reaches a height of 220–235 cm and has 14–15 nodes. The panicle fully emerges from the sheath of the last (flag) leaf and reaches a length of 23–25 cm; it is semi-compact and elongated-cylindrical, showing slight pubescence at the ripening stage. The grain is oval-shaped and light brown, with a starchy endosperm. Grain yields reach 2.2–2.5 t/ha. The thousand-grain weight ranges from 21 to 23 grams. Testing in 2023 revealed a carbohydrate content of 19.1% in the stalk juice, surpassing previously developed hybrids. Biomass productivity averaged 43.64 t/ha. The newly developed variety outperforms the US hybrid BMK Gold by 9–11 t/ha. For field cultivation, sowing in double-row strips (70 x 2 x 30 cm) is recommended, with a plant density of 120,000–140,000 plants per hectare. At the time of sowing, the soil temperature must not be lower than 10°C. The variety is characterized by resistance to lodging and grain shattering, which is crucial for sorghum cultivation. It is recommended for use as fresh animal feed and for the production of juice and food-grade glucose syrup. The pressed residue - bagasse can be processed into briquettes and pellets, as well as into a green fertilizer known as biochar.

Keywords: sorghum, varieties, characters, resistance, carbohydrates.

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