IMPORTANCE OF ZEA MAYS HYBRID SPECIES

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https://doi.org/10.5281/zenodo.7423879

Abstract. *It was necessary to choose maize inbred lines with significantly richer pigment-complex properties and the exceptional nutritional value in order to meet the many demands and justifiable needs for quality nutrition of people (primarily children and the elderly), domestic animals, as well as for industrial processing (semi- and final products). Such inbred lines allowed for the development of high-quality maize hybrids that adhere to accepted medical standards regarding the well-being of human and domestic animal nutrition as well as extensively developed industrial processing.*

Keywords: *Zea mays, hybrid selection, plant density, inbreds.*

ВАЖНОСТЬ ГИБРИДНЫХ ВИДОВ ZEA MAYS

Аннотация. *Выбор инбредных линий кукурузы со значительно более богатыми пигментно-комплексными свойствами и исключительной пищевой ценностью был необходим для удовлетворения многих требований и обоснованных потребностей в качественном питании людей (прежде всего детей и пожилых), домашних животных, а также промышленная переработка (полуфабрикаты и конечные продукты). Такие инбредные линии позволили разработать высококачественные гибриды кукурузы, соответствующие принятым медицинским стандартам в отношении благополучия человека и питания домашних животных, а также широко развитую промышленную переработку.*

Ключевые слова: *Zea mays, гибридная селекция, плотность растений, инбреды.*

Due to various achievements in maize breeding, hybrid selection, and high-quality hybrid seed production since 1954, this time period has historical significance[1,2]. Modern technical and technological prerequisites for the contemporary breeding process, the generation of hybrid seeds, and the availability of significant quantities of commercial seeds have been made available throughout this time [3–7]. Additionally to the outstanding successes in breeding standard maize hybrids for grain, silage, and industrial processing, it was necessary to create elite inbred lines and superior maize hybrids with increased chemical composition of vital biogenic components [8-13]. The first empirical studies into the necessity of a diet high in maize for human nutrition began a very long time ago—possibly 200 years ago. Scientific literature on this subject only appeared much later, in the 1950s, mostly at medical institutes[14].

The importance of maize as a nutritious diet must be acknowledged while talking about maize breeding. One of the potential energy sources is maize it is very low in lipids while being high in carbs. 80–100 calories are found in one ear of maize. In addition, maize contains numerous plant fibers, which decreases blood cholesterol and blood sugar levels, the risk of colon cancer is reduced by sugar [15]. Maize contains magnesium, folic acid, and vitamins C and B, all of which have beneficial effects. For healthy bones, phosphorus is a necessary nutrient, although potassium is necessary for each cell in the organism to function normally. It is well recognized that specific amino acids may contribute to cardiac disease when present in excessive amounts [15, 16]. Folic acid deficiency in the organs is the cause of this illness. For these reasons, including maize in your diet successfully protects your heart. Maize is advised for the

diets of both expectant women and pregnant women during the first three months of their pregnancies because folic acid is necessary for the correct development of the fetus' nervous system. For healthy growth, development, and metabolic processes, maize is particularly advantageous in all its forms [17, 18]. In addition to the aforementioned, carotenoids play a major part in the majority of therapeutic effects. They defend plants from harm brought on by photo-induced. Kernels' yellow color is caused by carotenoids, which act as precursors to the abscisic acid hormones [17, 18]. In the fight against cancer, heart disease, and cataracts, carotenoids play a vital role as antioxidants.

As was previously said, during the past 60 years, significant progress has been made in the breeding of maize and the creation of premium hybrid, commercial, and foundation seed varieties. The number of plants per area unit has greatly increased since 1978 as a result of the maize breeding program. This so-called "plant density" maize breeding effort strongly impacted the growth in yield of premium foundation and hybrid maize seed as well as commercial seed [19, 20, 21]. A program for creating maize inbred lines with upright top leaves (inbreds with effective photosynthesis) was devised a little while later. These inbreds were thought to be the most similar to the proposed efficient photosynthetic paradigm in 1998. A program to generate maize inbred lines rich in colours, with additional chemical features, and extraordinarily high nutritional values was established almost simultaneously [5, 22, 10, 12–13, 15–17].

Under typical production conditions, the majority of corn hybrids have been bred to produce a single harvestable ear [23]. Indeterminate or determinate ear development habits are frequently used to categorize single-eared corn hybrids. A hybrid's potential yield at various plant populations is reportedly significantly influenced by ear size (i.e., length and girth) and quantity, according to several seed companies. A "flexible" ear hybrid has an indeterminate ear size that may compensate for variance in plant populations, in contrast to a "fixed" ear hybrid's highly predictable ear size that restricts its ability to do so [24].

Conclusion.

Due to its high level of cross-pollination, maize offers numerous opportunities for utilizing hybrid vigor. There is still a ton of opportunity to take advantage of various high yielding hybrids and composites, even if this phenomena has already been successfully utilized.

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