Achievements and Future Prospects of NS Confectionery Breeding Program

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Abstract

In the past decade confectionery sunflower has become an essential part of human nutrition and diet programs. Confectionery sunflower breeding is characterized by the fact that different markets have different demands regarding seed size, hull color and other traits, which makes this process more difficult and costly. When creating confectionery hybrids, it is very important to combine genes responsible for high yield potential and good technical and technological traits of the seed. It is expected that highly-productive confectionery hybrids will replace confectionery varieties, which will influence the production of confectionery sunflower. Market demands for confectionery sunflower seeds convinced the Institute of Field and Vegetable Crops, Novi Sad to initiate a special breeding program with the aim of developing modern confectionery open-pollinated hybrids. The specific breeding goals for confectionery sunflower are: increase of protein content and quality >25%; low oil content <40%; oil stability with increase of kernel ratio and decrease of hull ratio; 1000 seed weight >100g; easy dehulling; uniformity of seed size; shape and color; as well as tolerance to dominant diseases and broomrape in regions of cultivation and seed quality maintenance during long term storage. An important part of the breeding program is testing new genotypes and finding genotypes that are distinguished by the stability of the tested properties in different agroecological conditions for easier choices and recommendation of confectionery sunflower hybrids. Continuous work on the creation of new highly productive low-oil sunflower hybrids of the confectionery type resulted in an assortment of

hybrids offered by IFVCNS in both Serbian and for the world market. In Serbia, domestic and foreign confectionery varieties with large black seeds have been replaced by NS confectionery hybrids, such as NS Gricko, NS Slatki, NS Garavi and NS Leviathan. These hybrids have lower oil content compared to standard hybrids (below 40%) with a protein content of over 20% and good stability and adaptability. The cooperation and exchange of breeding material from different breeding centers, as well as creation of joint hybrids has gained importance in recent years as a tool for creation of new, more resilient and productive confectionery hybrids, ready to face both challenges from the market and changing climate.

Key words: confectionery sunflower, seed yield, breeding goals, market request

食葵育种体系的成就与展望

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摘要

在过去的十年里，食葵已经成为人类营养和饮食必不可少的一部分。食葵育种的特点是基于不同市场的不同需求，包括种子大小、种壳色泽和其它性状，这使得育种的进程变得较困难，费用较高。在培育新的食葵杂交种时，结合控制种子高产潜力的基因、高新技术以及技术特征是很重要的。预计具有高产的食葵杂交种会取代自留食葵品种，使食葵产量增加。食葵种子的市场需求也影响了大田和蔬菜作物研究所，因此在 Novi Sad 发起了一项特殊的育种项目，目的是改进现代食葵开放授粉的杂交品种。食葵具体的育种目标是:提高蛋白质的含量和质量> 25%、低油量< 40%、稳定的含油量、提高种仁比、降低果壳率，千粒重> 100 克、易脱壳、种子大小、形状及颜色一致，在种植地区耐主要的病害和列当以及种子易长期保存。育种项目的一个重要部分是测试新品种的基因型及在不同的农业生态条件下的稳定性，为食葵杂交种选育不同的基因型提供便利。不断致力于创造新的高产低含油量食葵杂交种，使得 IFVCNS 在塞尔维亚和世界市场上提供的品种不断变化。在塞尔维亚，大量黑色籽粒的国内外食葵品种已被 NS 食葵杂种取代，比如 NS Gricko、NS Slatki、NS Garavi 和 NS Leviathan。含油量较标准（低于 40%）低，这些杂交种的蛋白质含量大于 20%，稳定性好且适应性强。近年来，不同育种中心的合作及育种材料的交换，以及共同培育杂交种都变得很重要，这已成为新的育种工具，可以创造更多的有抗性且高产的食葵杂交种，去面对来自市场和气候变化的挑战。

关键词：食葵、产量、育种目标、市场需求