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## ELEMENTS OF VARIETAL AGROTECHNOLOGY FOR A PROSPECTIVE ONION GENOTYPE (*ALLIUM CEPA* L.) UNDER IRRIGATED CONDITIONS

Mirzasoliev M.M.<sup>1</sup>,

Tuliboev I.I.<sup>2</sup>,

Alikulov S.M.<sup>1</sup>,

Abdullaev F.Kh.<sup>3</sup>

<sup>1</sup> Research Institute of Vegetable, Melon Crops and Potato, Tashkent, Uzbekistan

<sup>2</sup> JSC «O‘zbekiston temir yo‘llari», Tashkent, Uzbekistan

<sup>3</sup> LLC «Center for Implementation of Innovations and Technologies»,  
Tashkent, Uzbekistan

**Abstract.** This abstract summarizes the results of developing varietal agrotechnology for a prospective onion genotype (*Allium cepa* L.), isolated through long-term breeding selection (2016-2024) and tested in competitive trials (2021-2024). It was established that sowing in the 1<sup>st</sup> decade of March using a three-line ribbon scheme of 70×20/3×8-10 cm forms an optimal feeding area, providing uniform bulbs weighing 170-200 g and a marketable yield of 4.5-6.0 t/ha. High field resistance of the genotype to downy mildew (10.0-15.0% damage vs 25.0-30.0% in control) allows for the optimization of chemical fungicide treatments.

**Keywords:** *Allium cepa* L., onion, prospective genotype, varietal agrotechnology, sowing scheme, yield, downy mildew.

**Introduction.** Onion (*Allium cepa* L.) is an essential vegetable crop whose economic efficiency is determined by the cultivar's adaptability to soil and climatic conditions and the degree to which the applied agrotechnology matches its biological requirements. Full realization of the potential yield of new genotypes requires a differentiated approach to cultivation technology elements (sowing dates, feeding area, moisture regime). At Research Institute of Vegetable, Melon Crops and Potato (RIVMCP), a prospective mid-season onion genotype was isolated from a hybrid population. The aim of the study was to optimize the key parameters of varietal agrotechnology for cultivating the prospective onion genotype to ensure maximum marketable productivity under irrigated conditions.

**Materials and Methods.** Research was conducted in 2016-2024 at the experimental base of RIVMCP (Tashkent Region). Field trials were established on typical sierozem soils under irrigation. The effects of sowing dates (1<sup>st</sup> decade of March) and plant arrangement methods according to a ribbon three-line scheme of 70×20/3×8-10 cm with a seed sowing rate of 4.0-5.0 kg/ha were studied. The released variety «Ravnaq» was used as a control. Yield recording, phytopathological evaluation for resistance to downy mildew





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(*Peronospora destructor*), and mathematical data processing were carried out according to standard methods.

**Results and Discussion.** The studied prospective genotype belongs to the mid-season group with a vegetation period of 136-140 days from mass emergence to harvest maturity. It was established that the optimal sowing date in the region is the 1<sup>st</sup> decade of March. Using the three-line scheme of 70×20/3×8-10 cm provides a plant density that allows forming large marketable bulbs of rounded shape weighing 170.0-200.0 g with medium-firm yellow dry skins. Marketable yield varies between 4.5-6.0 t/ha (*table 1*).

Table 1. **Economic-biological characteristics and technological regulation of cultivation of the prospective onion genotype (*competitive trial, 2021-2024*)**

| Agrotechnological Indicator          | Regulated Parameter of the Genotype                           |
|--------------------------------------|---------------------------------------------------------------|
| Vegetation period / Maturity group   | 136-140 days ( <i>mid-season</i> )                            |
| Optimal seed sowing date             | 1 <sup>st</sup> decade of March ( <i>early spring cycle</i> ) |
| Arrangement scheme and ribbon sowing | 70×20/3×8-10 cm ( <i>three-line ribbon</i> )                  |
| Seed sowing rate                     | 4.0-5.0 kg/ha                                                 |
| Average marketable bulb weight       | 170,0-200,0 g                                                 |
| Marketable yield                     | 4.5-6.0 t/ha                                                  |
| Field incidence of downy mildew      | 10.0-15.0% ( <i>control «Ravnaq»- 25.0-30.0%</i> )            |
| Transportability and storability     | High ( <i>tight skin adhesion</i> )                           |

An important property of the genotype is its expressed field resistance to downy mildew. During years of epiphytotic disease development, the degree of leaf apparatus damage did not exceed 10.0-15.0%, which is twice lower than the control (25.0-30%). This preserves leaf assimilation area and allows reducing fungicide applications to a preventive minimum.

**Conclusions.** An agrotechnological regulation was substantiated for the prospective onion genotype: sowing in the 1<sup>st</sup> decade of March using a three-line scheme of 70×20/3×8-10 cm, providing a yield of 4.5-6.0 t/ha and bulb weight of 170.0-200.0 g. High resistance of the genotype to downy mildew (10.0-15.0% damage) reduces pesticide load and promotes environmental safety of cultivation technology.

### References

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