

Development of sweet pepper F₁ hybrids based on MAS methods by fruit quality and resistance genes

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This work aims to assess the developed, using MAS methods, F₁ hybrids and parent forms of sweet pepper by fruit quality (*Ccs*, *cl*, *norc*) and pathogen resistant genes (*Me1*, *pm*) by a complex of biochemical (dry matter, carotene, vitamin C, soluble carbohydrates) and biometric (fruit mass, fruit wall thickness; early, commercial and gross yield) fruit characters and study the peculiarities of the characters' manifestation in F₁ hybrids. As an experimental material, 9 parental forms and 16 F₁ hybrids of sweet pepper were studied (crossing schemes 8×1 and 1×8). The features of the characters' manifestation in hybrids were evaluated during the period of three years (2016–2018) by the value of true heterosis and degree of dominance. As a standard, Troika pepper variety was used. Based on the three-year test results, valuable F₁ hybrids were identified (L45-11 × Shokoladnaya krasavitsa, L45-11 × Zhelty bukiet, L45-11 × L140/0, L140/0 × L45-11) characterized by the dry matter content at the level of 8.18–8.77 %; carotene – 19.95–32.73 mg/kg; vitamin C – 112.49–144.4 mg/kg; soluble carbohydrates – 4.36–4.77 %. Three best hybrid combinations with a complex of biometric features were selected: L45-11 × Shokoladnaya krasavitsa, L140/0 × L45-11 and L45-11 × L160-10 characterized by the fruit mass at the level of 136.6–175.4 g; fruit wall thickness – 6.8–7.5 mm; early yield – 0.68–0.77 kg/m²; commercial yield – 4.16–4.97 kg/m²; and gross yield – 4.27–5.01 kg/m². Analysis of the true heterosis manifestation in hybrids revealed its multidirectionality depending on the conditions of the vegetation period by the majority of the studied characters. The most frequent manifestation of the values of yield, mass, and carbohydrate content was the dominance and overdominance in the direction of the increased characters. The thickness of the fruit pericarpium manifested by the intermediate inheritance type – overdominance in the direction of decreased characters.