Suitability for Field Cultivation of New Cucumber F₁ Hybrids Bred at the Research Institute of Horticulture

Urszula Kłosińska, Marzena Nowakowska, and Elżbieta U. Kozik
Research Institute of Horticulture, Skierniewice, Poland

Our aim was to evaluate the combining ability of cucumber breeding lines based on an assessment of their economically important traits in experimental F₁ hybrids. Six newly developed hybrids, bred at the Research Institute of Horticulture (InHort) in Skierniewice, Poland, were compared with the commercially available ‘Aladyn’ (InHort) and ‘Sremski’ (Spójnia Nocowo). The evaluations were conducted from 2012 through 2014 in the field. All six experimental hybrids had significantly higher marketable and total yields than the standard ‘Sremski’. Significant progress in breeding was apparent in the results for early yield. The earliest experimental hybrid was ‘Ibis F₁’ registered in 2014. Moreover, ‘Ibis’ is the first Polish cucumber cultivar with chilling tolerance at the germination and first leaf stages. All six experimental hybrids had morphologically uniform fruits, most of them showed very high yield quality. Progress in increasing the level of resistance to Pseudoperonospora cubensis (downy mildew) was also evident. ‘SKW 1814’ had the highest level of resistance to this pathogen among all hybrids tested, including the resistant control, ‘Aladyn’. On the basis of the assessment of these F₁ hybrids, the effects of the general (GCA) and specific combining ability (SCA) of their parental components were estimated. Analysis of variance of GCA and SCA allowed us to select parental lines with the best combining ability. The gynoecious line B 6628 showed the highest positive estimator of GCA for the most important traits, while the monoecious paternal line B 6992 had the greatest SCA effect in increasing the resistance to P. cubensis.