SUITABLE OF NEW CUCUMBER F₁ HYBRIDS
BRED AT RESEARCH INSTITUTE
OF HORTICULTURE FOR FIELD CULTIVATION

Introduction

Current breeding programs of new cucumber cultivars are based on F₁ hybrids. Obtaining parental lines is the first step of F₁ hybrids breeding. Following, is the selection of parental components with a good combining ability. Faced with high and still-rising demands of the market, the intensive breeding program at the Research Institute of Horticulture (InHort) in Skierniewice, Poland, has been provided and resulted in developing of 18 commercial F₁ hybrids, commercially released and successfully grown in Poland as well as in some other European countries.

The aim of the studies was to evaluate the horticultural value of new cucumber pickling F₁ hybrids bred at the InHort in Skierniewice.

Materials & Methods

The experiments were conducted in 2014 - 2015 in the field at the InHort, Skierniewice, Poland. The study was carried out in a randomized block design with three replications. The area of each plot was 10.8 m². Six new pickling cucumber F₁ hybrids, Edyp, Ibis, Ikar, SKW 1814, G 7, and G 3441, bred at the InHort were compared with the released earlier controls Aladyn F₁ (InHort) and Śremski F₁ (Spójnia Nochowo). Two of them (G 7, G 4331) are experimental F₁ hybrids; SKW 1814 is in registration process, and the remaining three (Edyp, Ibis, Ikar) are on the Polish National List. Seeds were planted in the second decade of May. Fruits were harvested by hand twice a week. Total and marketable yields were determined with regard to fruit fractions according to the Polish standards, based on fruit length (gherkin 4.0 - 6.0 cm, pickling 6.0 - 10 cm, dill 8 - 15 cm, irregular). Yield from first 4 harvests was determined as early and marketable yield consisted of pickling and dill fractions. The level of downy mildew incidence was tested on the basis of the percentage of leaf area infected by the pathogen in 3 terms during the growing season in each year.

Results

✓ All tested new hybrids showed higher marketable and total yield than the standards Śremski F₁ and Aladyn F₁ (Figure 1). Four F₁ hybrids (Ibis, Ikar, G 7, G 3441) had higher early yield than ‘Śremski F₁’, which has been well known as an early variety in Poland.
✓ The quality of yielding expressed by the marketable yield participation in total yield was the highest for all new varieties in comparison with ‘Aladyn F₁’ and ‘Śremski F₁’. (Figure 2). The high quality of yield may be explained also by the fact that six new varieties, and especially ‘SKW 1814’, showed the lowest tendency for developing the irregular fruits.
✓ The new cucumber F₁ hybrids showed high level of resistance to Pseudoperonospora cubensis (downy mildew) infection (Figure 3). Three of them: ‘SKW 1814’, ‘Ikar F₁’, and ‘Edyp F₁’ exhibited the highest and stable level of resistance to downy mildew, which was significantly higher than in the resistant standard – ‘Aladyn F₁’.

Conclusions

The new F₁ cucumber hybrids, show high productivity and quality of fruit and may be grown with no chemical protection in ecological farms or under limited chemical applications in integrated cultivation. It also shows that the big step was made in recent genetic and breeding activities to improve the quality of yield and higher level of resistance to downy mildew which has been the most destructive disease of field cucumber in almost worldwide.

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