INSTYTUT OGRODNICTWA

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SUITABLE OF NEW CUCUMBER F_1 HYBRIDS BRED AT RESEARCH INSTITUTE OF HORTICULTURE FOR FIELD CULTIVATION

Introduction

Current breeding programs of new cucumber cultivars are based on F_1 hybrids. Obtaining parental lines is the first step of F_1 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 F_1 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 F_1 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 m^2. Six new pickling cucumber F_1 hybrids, Edyp, Ibis, Ikar, SKW 1814, G 7, and G 3441, bred at the InHort were compared with the released earlier controls Aladyn F_1 (InHort) and Śremski F_1 (Spójnia Nochowo). Two of them (G 7, G 4331) are experimental F_1 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.

Reaction of two cucumber F_1 hybrids to *P. cubensis* under field conditions

Results

- ✓ All tested new hybrids showed higher marketable and total yield than the standards Śremski F_1 and Aladyn F_1 (Figure 1). Four F_1 hybrids (Ibis, Ikar, G 7, G 3441) had higher early yield than 'Śremski F_1' 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 F_1' 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 F_1 hybrids showed high level of resistance to *Pseudoperopnospora cubensis* (downy mildew) infection (Figure 3). Three of them: 'SKW 1814', 'Ikar F_1', and 'Edyp F_1' exhibited the highest and stable level of resistance to downy mildew, which was significantly higher than in the resistant standard – 'Aladyn F_1'.

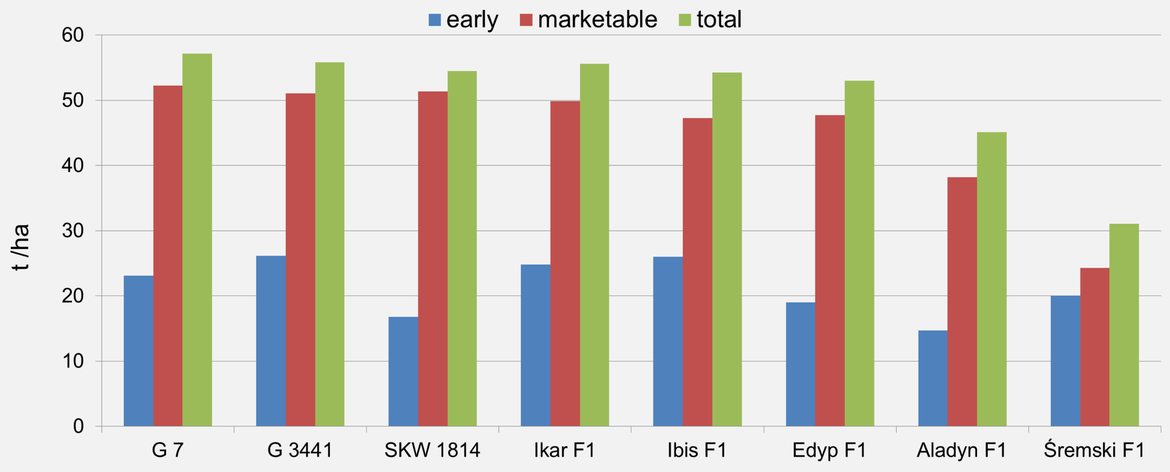

Figure 1. Yield of F_1 hybrids pickling cucumber (average 2014-2015)

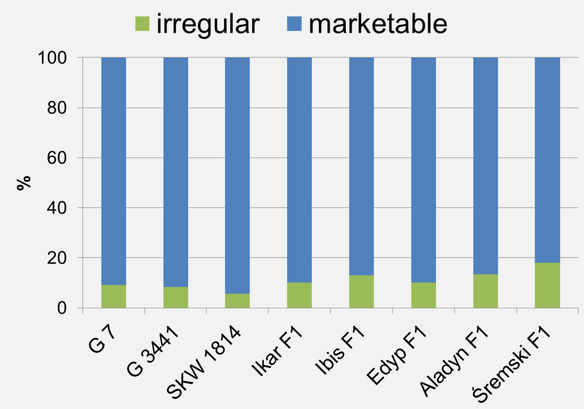

Figure 2. Yield quality of F_1 hybrids pickling cucumber (average 2014-2015)

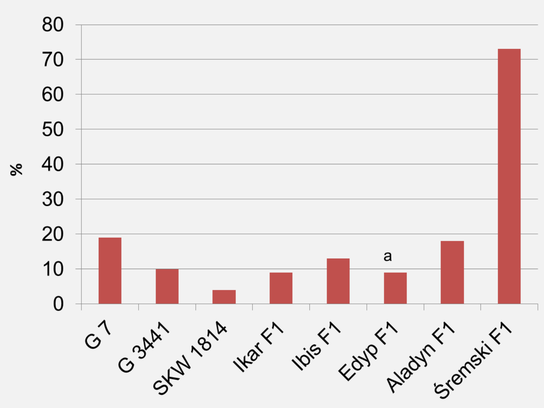

Figure 3. Infected leaf area by *P. cubensis* in field conditions (average 2014-2015)

Ibis F_1

Ikar F_1

Edyp F_1

SKW 1814

G 7

G 3441

Conclusions

The new F_1 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.

The investigation was sponsored by the Ministry of Agriculture and Rural Development (multiannual programme 2015-2020 Task 1.1)