Cucumber Seed

effect of the number of fruit per plant on yield and quality

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Two varieties of cucumbers—Chicago Pickling and Cubit—were selected to test to what extent limiting the number of fruits which mature per plant would affect the yield and quality of the seed produced.

Cubit was selected because it represents a trend in variety production—it has a long fruit with a small seed cavity. The plot was designed as a Latin square with each variety in paired rows, so that one row of each would appear in each treatment. Guard rows were planted on the sides and guard plants left at the ends of the plot to furnish equal competition and allow an equal opportunity for pollination of all test plants.

Four treatments were selected arbitrarily: *A*, three fruits per plant; *B*, six; *C*, nine; and *D*, the maximum number of fruits a plant would set and mature under conditions of natural pollination.

The maximum number must be based upon the average fruit-set per plant because all plants do not mature the same number of fruits under natural conditions.

On the plants where the number of fruits was restricted, the first fruits to set were the ones allowed to mature. Excess fruits were removed from the plants two times per week. Fifteen plants were grown in each replication.

The fruits were harvested when fully mature. The seed was extracted, washed and dried. A germination test was run on duplicate 100 seed samples from each plot. There was no separation of plants within plots, but seed from each variety and each plot were kept separate.

Total Yield of Seed

In the variety, Chicago Pickling, the total yield of seed increased significantly with each increase in number of fruits maturing per plant. The average number of fruits which matured per plant in the *D* treatment was 12.5.

The variety, Cubit, while showing significant increases over the *A* treatment, in all cases showed a drop in total seed production between the *C* and *D* treatments. This is due to the fact that the number of fruits maturing in both the *C* and *D* treatments represent the maximum number of fruits set and matured normally by the plants in the two treatments. Both were below nine—the figure selected for treatment *C*. In treatment *D* less fruits matured per plant—6.6—than in treatment *C*—7.5. Actual yields of seed obtained were used in the calculations.

Weight of 200 Seeds

In calculating the weight of 200 seeds, duplicate samples were selected at random from each treatment. Significant reductions in seed weight were recorded, in both varieties, as the number of fruits matured per plant increased.

The production of larger, heavier seed by plants maturing the lesser number of fruits apparently does not affect the quality of the seed. Some investigators have reported results indicating that plants produced from heavier seeds show more vigorous growth, attain greater weight and size, and produce larger yields as determined by number and size of fruits than do plants grown from seeds of lighter weight. Other investigators have shown by the results of their experiments that the seed weight factor is significant with respect to size of plants only during the early stages of plant growth, and that if the growing season is long enough the early superiority might disappear entirely.

Chicago Pickling seed in general was heavier than that of Cubit. When duplicate 200-seed samples were taken from mass seed lots of the two varieties, the weight of 200 seeds of the variety Cubit was 6±.5 grams, while the weight of a like number of seeds of the variety Chicago Pickling was 7±.5 grams.

Seed Per Fruit

Where yield of seed per fruit was calculated, the actual yield in the variety Chicago Pickling was highest in treatment *B* with six fruits per plant and dropped off on each side of this number. However, no significant differences were recorded.

In the variety Cubit slight differences were recorded, but here again differences were not significant.

Seed Germination

When germination tests were run on duplicate 100-seed samples from each plot, slight differences were recorded with the lower percentage germination coming in seed harvested from plants maturing the greater number of fruits. No significant differences were recorded in the variety Chicago Pickling.

In the original germination test, significant differences in germination were recorded in the variety Cubit. The seeds which failed to germinate were stored for 30 days and again tested. Sufficient of the seed germinated to erase these differences. It is believed the original differences were largely due to dormancy.

Observations

Total yield of cucumber seed was not increased by regulating the number of fruits per plant. Maximum yields were obtained in treatments where the greatest number of fruits matured.

The quality of cucumber seed was not influenced by regulating the number of fruits which matured per plant.

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Differences in total yield of seed in grams per 15 plant replications

Chicago Pickling	A	B	C
A			
B	477.8**		
C	908.8**	413.0**	
D	1329.0**	851.3**	420.2**

* Least sig. dif. = 125.7 gms.
** Least highly sig. dif. = 190.3 gms.

Cubit	A	B	C
A			
B	205.5**		
C	350.7**	145.2*	
D	295.0**	89.2	55.7

* Least sig. dif. = 142.8 gms.
** Least highly sig. dif. = 213.2 gms.

Differences in weight of 200 seeds

Chicago Pickling	A	B	C
A			
B	.22*		
C	.37**	.15	
D	.72**	.50**	.35**

* Least sig. dif. = .22.
** Least highly sig. dif. = .33.

Cubit	A	B	C
A			
B	.30*		
C	.53**	.23*	
D	.50**	.20	.03

* Least sig. dif. = .22.
** Least highly sig. dif. = .33.