

3. Environmental effects on fertility of restored sterile hybrids.

Thirty-six different restored 4-way hybrids were made up in the following manner: One pollen parent inbred, heterozygous for the Il53 "F" gene was crossed with the other pollen parent inbred, which was heterozygous for the K55W "F" gene. The resultant pollen single (carrying "T" cytoplasm) was used as male on appropriate "T" sterile seed parents. Each of the resulting 36 restored 4-way were compared with a blended 1:1 sterile and normal version at 11 locations in 1955. The results were as follows:

LOCATIONS	50-50 BLEND % FERTILE	RESTORED HYBRID % FERTILE
1. Lincoln, Nebraska	55.7	59.2
2. New Cuyama, California	51.6	55.3
3. Franklin, Kentucky	44.9	50.2
4. Ithaca, Michigan	59.1	64.8
5. Tuscola, Illinois	52.0	61.5
6. Huntsville, Alabama	62.7	68.8
7. Carrollton, Missouri	64.6	79.0
8. Monroe, Iowa	86.6	88.4
9. Aurora, Illinois	55.6	63.9
10. Aurora, Illinois*	55.1	68.2
11. Aurora, Illinois**	56.8	54.4

*With 1400 lbs. sugar added per acre

**With 1400 lbs. Nitrogen added per acre

The fertility of the restored material was in close agreement ($r=.901$) with fertility of the checks at the different locations.

Similar results were obtained in 1954 when eleven 4 ways, made up alternately with 3 different "F" gene sources, each of these being produced both (1) with, and (2) without "T" cytoplasm in the pollen parent, were compared for tassel fertility with corresponding normal version at 9 locations.

In neither 1954 nor 1955 during this study, was it possible to differentiate between fertility of normal 4-way varieties, and those restored with the "F" gene of Il53, K6, K55, Tx127C, etc. in any variety, at any location, or under any condition, within limits of the sensitivity of techniques employed.

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