The photosynthetical capacity of a maize leaf is only slightly affected by its date of origin during a normal growing season if the plant is well-watered and well-fertilized. Lower leaves, if supplied with adequate nutrition, assimilate CO₂ at nearly the same rate as upper leaves when they receive an equal intensity of light. However, nutrient stressed plants have steep nutrient concentration gradients and hence photosynthetical gradients, favoring the top leaves. This brief report concerns only K, but P, N, and Mg have also been shown to affect photosynthesis and to be translocated within stressed plants (5, 6, 7). Thus, lower leaves may be under severe nutrient stress and lack the capacity to fix CO₂. An evaluation of the productive capacity of corn leaves in various positions in the crop canopy must, therefore, consider the mineral nutrient status of the leaves.

**Literature Cited**


**INHERITANCE OF STICKY LEAF CHARACTER IN ALFALFA**

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A MUTANT type in alfalfa (Medicago sativa L.) which will henceforth be referred to as "sticky leaf", appeared in the F₂ population of a cross between a normal and a mottled-leaf plant. Inheritance of the mottled character was previously reported. The sticky leaf character has previously been associated with a particular chromosome through trisomic analysis, but its inheritance has not been previously reported. The sticky leaf mutant type is characterized by the adhesion of the abaxial sides of adjacent leaflets in the same leaf as well as adhesion of opposite halves of the same leaflet. Leaves showing the character are shown in Figure 1. This character differs from the folded leaf character previously reported in which there is adhesion only between opposite halves of the same leaflet. Crosses between the two mutant types give normal F₁ plants.

The parents and F₁ plants of original cross were all normal with respect to the sticky leaf character as were 1638 F₂ plants grown from them. Forty-eight F₂ families were grown tracing back to four F₁ plants. The F₂ from one F₁ were all normal but from the other 3 F₁ plants segregation for sticky leaf occurred. There were 34 F₃ families tracing to the three F₁ plants and seven families showed segregation for sticky. These seven segregating families had an average of 132 plants per family. Now if we assume that sticky is determined by a single recessive tetrasomic gene, one of the plants entering into the original cross must have been triploid (AAAA) and the other parent quadruploid (AAAAA) for the normal allele. Then one-half of the F₁ plants would be expected to be triploid and the remainder quadruploid. In the present case 1 quadruploid and 3 triploid were obtained as indicated by segregations in the F₃ generation. Similarly all plants in the F₂ should be normal barring double reduction, and the 1638 plants grown were all normal. Among the F₃ arising from the triploid plants, 25% would be duplex and would give ratios approximating 35:1 of normal to sticky in the F₄. As indicated above 7 of 34 F₃ families were segregating, which is very close to the 8.5 families expected.

The 7 segregating F₃ families contained 951 individuals and the expected 35:1 ratio would give 924.6:24.4. The actual ratio was 931:20 which gives a χ² value of 1.595 and a probability of 0.2–0.3.

If the above interpretation is correct, then the cross of a sticky leaf × normal should give a 35:1 ratio in F₂. Such a cross was made and the F₂ consisting of 263 plants contained seven sticky plants where 7.3 would be expected.

The following points are all in accordance with the hypothesis that sticky leaf is determined by a single recessive gene which occurred in a triploid genotype in one of the parents of a cross studied.

1. No phenotypic segregation occurred in F₁ or F₂.
2. Approximately 25% of the F₃ families from the F₁ plants indicated as triploid showed segregation.
3. The segregation within these F₃ families gave a close approximation to a 35:1 ratio.
4. A sticky leaf F₃ plant when crossed to an unrelated normal plant gave a 35:1 segregation in F₄.

Thus the hypothesis of a single recessive tetrasomic gene for the sticky leaf character is sustained. The symbol st is proposed for the gene. The character is easily identified and promises to be a useful marker gene.