

## IV. RESEARCH NOTES

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1) Soybean linkage tests.

F<sub>2</sub> linkage results are presented in Table 1 with a = XY, b = Xy, c = xY, and d = xy for the gene pairs listed in the form of Xx and Yy. Percentage recombination was obtained as previously (Buzzell, 1974).

The fg<sub>1</sub> gene appears to be loosely linked with dt<sub>1</sub> in Linkage Group 5. Scoring for dt<sub>1</sub> was done on F<sub>2</sub> plants and F<sub>3</sub> progenies; for the origin of OX250, see Buzzell (1975).

An estimate of the linkage between Fg<sub>3</sub> and I was obtained, but additional work is needed to map Fg<sub>3</sub> and Fg<sub>4</sub> in Linkage Group 1. Since 'Kingwa' carries td (Bernard, 1975), I and t were scored on the basis of the presence or absence of quercetin glycosides in the leaves (Buttery and Buzzell, 1973).

Table 1  
Soybean F<sub>2</sub> linkage tests

Genes	a	b	c	d	Sum	%R	SE	Phase
OX250 ( <u>fg</u> <sub>1</sub> <u>dt</u> <sub>1</sub> ) X OX922 ( <u>Fg</u> <sub>1</sub> <u>Dt</u> <sub>1</sub> )								
<u>Fg</u> <sub>1</sub> <u>fg</u> <sub>1</sub> <u>Dt</u> <sub>1</sub> <u>dt</u> <sub>1</sub>	135	31	33	16	215	39.8	3.0	c
Blackhawk ( <u>fg</u> <sub>2</sub> <u>Fg</u> <sub>3</sub> <u>t</u> <u>ep</u> <u>i</u> <sup>i</sup> ) X Kingwa ( <u>Fg</u> <sub>2</sub> <u>fg</u> <sub>3</sub> <u>T</u> <u>Ep</u> <u>i</u> )								
<u>Fg</u> <sub>2</sub> <u>fg</u> <sub>2</sub> <u>Fg</u> <sub>3</sub> <u>fg</u> <sub>3</sub>	122	42	37	18	219	54.9	3.2	r
<u>Fg</u> <sub>2</sub> <u>fg</u> <sub>2</sub> <u>T</u> <u>t</u>	126	38	44	11	219	52.6	3.5	c
<u>Fg</u> <sub>2</sub> <u>fg</u> <sub>2</sub> <u>Ep</u> <u>ep</u>	117	45	40	13	215	52.3	5.3	c
<u>Fg</u> <sub>2</sub> <u>fg</u> <sub>2</sub> <u>i</u> <sup>i</sup> <u>i</u>	126	36	39	14	215	46.8	4.9	c
<u>Fg</u> <sub>3</sub> <u>fg</u> <sub>3</sub> <u>T</u> <u>t</u>	111	48	59	1	219	13.7	6.6	r

References

- Bernard, R. L. 1975. The inheritance of near-gray pubescence color. Soybean Genet. Newsl. 2: 31-33.
- Buttery, B. R. and R. I. Buzzell. 1973. Varietal difference in leaf flavonoids of soybeans. Crop Sci. 13: 103-106.

- Buzzell, R. I. 1974. Soybean linkage tests. Soybean Genet. Newsl. 1: 11-14.  
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1) Decapitation technique to screen for photoperiod insensitivity in soybean, Glycine max (L.) Merrill.

The lack of a suitable screening technique for photoperiod response has prevented the identification of photoperiod-insensitive ( $P_1$ ) genotypes. In an  $F_2$  population, each plant has a specific genotypic constitution. To determine the photoperiod response, each  $F_2$  plant should be subjected to at least two different photoperiods. In rice, this was accomplished by separating the component tillers of each plant and subjecting them to different photoperiods (Chandraratna, 1955).

To obtain more than one individual of the same  $F_2$  genotype early in the growth stage, the following three different methods were tried: (a) rooting of cuttings, (b) grafting to a common stock, and (c) 'decapitation'. To test the above techniques, two strains identified as photoperiod insensitive, PI 194.647 (Acc. 215) and PI 248.407 (Acc. 1322) and one photoperiod-sensitive (PS) strain, Acc. 2120 (a pureline from PI 86.736) were used.

Rooting of cuttings: Ten plants from each strain were grown under long days, and cuttings of equal length were taken from each plant and rooted. The objective was to obtain two or more individuals for each  $F_2$  genotype for testing under different photoperiods. This technique did not work satisfactorily because the time taken for rooting varied with variety, and the cuttings were not satisfactorily rooted.

Grafting: Ten plants from each strain were grown as above. In this method, the cuttings were grafted to a common stock plant instead of rooting. The plants used as stock were grown to the first unifoliate leaf stage and cut between the unifoliate and cotyledonary node. The test cuttings (scions) were wedge grafted. The scion and stock were held together by a plastic clip. The graft union time between plants within and between varieties varied considerably. Therefore, this technique was also not satisfactory.