

THE NORTHEAST AGRICULTURAL COLLEGE
Department of Agronomy
Harbin, Heilungkiang Province, China

1) Transgressive inheritance of early maturity for breeding of extremely early soybean cultivars.

The key point to extend soybean growing area to the cool, long day length, and short-growing season regions of the high latitude is breeding of day-neutral and cool-tolerable extremely early cultivars. Several countries have already got a distinct achievement in this respect. For example, extremely early soybean cultivars of Maturity Group 00 even 000 have been developed in countries of North America and North Europe. In Heilungkiang Province of the People's Republic of China, such kind of work has also been carried out for the purpose of extending soybean production to the grassland area north of Greater Sinan Mountain. In order to obtain the extremely early varieties, crosses (Table 1) were made between early varieties of different origin to accumulate the early maturity genes.

From Table 1 we can learn that, owing to the genotypic resemblance of the parents on earliness, only a few of the crosses whose parents both originated in the Northeast of China perform transgressive inheritance in F_2 , and no extremely early new strains were obtained from such crosses. Because soybean germplasms of North U.S. were mostly from Northeast China, there are also only a few crosses between varieties of these two sources performing transgressive inheritance on earliness. On the other hand, when early varieties of Northeast China were crossed with early varieties of North Europe, North Japan, and Central China, a higher proportion of crosses were observed to

Table 1
Crosses between different early varieties
(The Northeast Agricultural College, 1970-1976)

Sources of the two parents	No. of crosses	Crosses with transgressive inheritance of earliness in F_2
Northeast China with Northeast China	44	4
Central China with Northeast China	3	1
North Europe with Northeast China	11	5
North Japan with Northeast China	2	1
North America with Northeast China	12	2

perform transgressive inheritance on earliness, and many promising extremely early strains were obtained. These results show that selection following crosses between early varieties with different genotypes on earliness is an effective method to develop extremely early soybean cultivars with improved agronomic characters for high latitude and short growing season regions. It is evident that discovering the source of genes governing such extreme earliness through systematic study is the foundation of such breeding work.

Table 2
The general performance of several of the newly developed
extremely early soybean strains
(Harbin, China, 1976-1977)

Parents and strains	Growth period (days)	Plant height (cm)	Weight of 100 seeds (g)	Yield
Heiho 3*	110	--	--	
Funsho 12*	115	--	--	
76-1959	104	89.0	20.5	25.03% (over ck)
76-1748	103	83.3	20.0	22.64% (")
76-287	101	84.4	19.1	20.87% (")
Funsho 12*	115	85.0	21.0	
Heiho 3*	110	70.0	20.0	
76-1909	103	77.6	22.5	15.19%
Kusun*	100	60.0	20.5	
Japanese Early	95	50.0	23.8	
47-1D	92	60.0	18.5	
47-1C	90	65.0	18.0	
Logbeau (Germany)	95	52.0	19.0	
47-1D	92	60.0	18.5	
76-333	83	50.0	17.5	1870 (kg/ha)
76-331	83	45.0	18.0	1900 (")
76-335	85	46.0	19.0	1890 (")
Funsho 11*	90	50.0	20.1	
Sweden Soybean	90	60.0	17.0	
77-12	87	65.0	18.6	2321 (")

*Adapted cultivar of Northeast China.

Chin-ling Wang
Fun-lang Kao