Research Notes: Asian Vegetable Research and Development Center

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IV. RESEARCH NOTES FROM COOPERATORS

ASIAN VEGETABLE RESEARCH AND DEVELOPMENT CENTER
Shanhua, Tainan, Taiwan

1. The soybean improvement program at the Asian Vegetable Research and Development Center.

In 1971, the Asian Vegetable Research and Development Center (AVRDC) was created as an international research organization responsible for improving the production and nutritional quality of vegetable crops in the humid tropics. The Center is located to the north of Tainan City in southern Taiwan (between 23°07'07" and 23°06'36" north latitude, and between 120°16'45" and 120°17'28" east longitude at an elevation of nine meters AMSL).

In March 1973, AVRDC selected the soybean as one of the six crops to receive initial emphasis in its research program. The goal of AVRDC's soybean improvement program is to develop and select varieties that are especially well adapted to the tropics and subtropics, where too few soybeans are grown today and where yields on farmers' fields are low.

Currently, our soybean research is focused on: (1) exploring the factors limiting the soybean's yield potential in the humid tropics; (2) studying the effects of different photoperiods which limit the adaptability of the soybean; and (3) breeding for multiple disease resistance.

Our first activity was to collect germplasm from around the world. To date we count 5133 cultivars from 42 different countries in our world collection. We, of course, are most interested in increasing our collection and welcome any assistance from fellow breeders in this aspect.

Yield trials of our elite selections have indicated the possibility of obtaining yields of around seven tons per hectare under our conditions at Shanhua. Further experimentation is in progress to confirm this high yield potential.

Our opinion is that the tropical soybean should have low photoperiod sensitivity, and should not flower too early in hot weather (some varieties
when grown in the tropics start flowering before they have developed sufficient vegetative growth to produce a satisfactory crop). From a field screening of 2041 accessions, we tentatively identified 505 cultivars as photoperiod insensitive. Further screening identified 168 accessions as photoperiod insensitive in both the spring and fall seasons.

Accessions carrying resistance or different degrees of tolerance to soybean rust, SMV, bacterial pustule, downy mildew, purple seed stain, and root-knot disease have been identified through field screening under natural infection. In some cases, resistance has been confirmed in the greenhouse with artificial inoculation.

Our hybridization program to combine resistance to the various diseases with a high yield potential has produced a number of highly promising selections which are presently in the F4 and F5 generations. Nearly 10,000 single plants from over 800 different cross combinations have been advanced in this program.

During 1974 we sent out 4719 cultivars, as well as 11 selections in the F3 generation, and 340 in the F4, to 33 scientists in 21 countries. We hope to expand our scientist-to-scientist outreach activities considerably in the future. We have also sought to cooperate fully with INTSOY and the other international agricultural research centers to better meet our common goal to produce more food for mankind.

An annual report is published every year (1974's will be ready in July); you are welcome to write AVRDC's Office of Information Services to be included in our mailing list.

Specific germplasm or early and advanced segregating populations (or both) are available to fellow researchers. You may direct your correspondence and requests to:  
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