

ORAZ

PHOTOPERIODISM IN SOYBEANS IN DEPENDENCE OF PLANTING DATES

Jegor MILADINOVIC, Milica HRUSTIC

Institute of Field & Vegetable Crops

21000 Novi Sad, Yugoslavia

- **Objectives** : During 1994 and 1995 field investigations has been provided in order to examine photoperiod reaction of soybean plants from various maturity groups, that are created and grown in environmental conditions of Yugoslavia. Moreover, the objective was to examine influence of daylight changes on yield, as the main and final goal of the plant breeding.

- **Material and Methods** : Four commercial soybean varieties created in the Institute of Field and Vegetable Crops, Novi Sad were tested: Ranka, Panonka, Balkan and Vojvodjanka. The trial was set according to RCBD method in 4 replications, with 7 planting dates. The following traits were tested: grain yield (t/ha), harvest index, and vegetative and reproductive photoperiod (hours). Analysis of variance for three factor design was applied, and interdependence of examined traits was established using correlation coefficients. Those results were statistically solved by path-coefficient analysis.

- **Results and discussion** : In conditions of insufficient amount of water, earlier varieties Ranka and Panonka (m.g. 00 and 0) in early planting dates achieved higher grain yield than later varieties Balkan and Vojvodjanka (m.g. I and II). Because of its shorter vegetation period, earlier varieties passed through critical stages earlier and faster. Higher influence on grain yield of those varieties has duration of the vegetative stage. Varieties with longer vegetation in later planting dates used rainfalls in later part of the vegetation period, which resulted with higher grain yield mainly formed during reproductive stage.

In conditions of sufficient amount of water, the highest influence on grain yield of all tested varieties, independent of planting date, has duration of reproductive period. Exception is, however, late variety Vojvodjanka. Because of its very long vegetation period, this variety could not reach the maturity in later planting dates. Therefore, highest influence on grain yield of this variety has duration of vegetative stage.

- **Conclusion and Perspectives** : It has been established that photoperiodism in soybeans expresses primarily through changes in growth stages duration. Due to shorter daylengths in late planting dates, growth stages are shorter also, and yields are lower.

Achieved results could be used as the basis for investigations of adaptability and stability of varieties grown in our agroecological conditions, as well as in the future work in soybean breeding.

- **Bibliography** :

- Falconer, D.S. (1987): Introduction to quantitative genetics. The Ronald Press Co., New York.
- Fehr, W.R. and Caviness, C.E. (1977): Stages of soybean development. Iowa State Univ., Spec. Rep. 80.
- Li, C.C. (1977): Path-analysis - A primer. The Boxwood Press, Pacific Groove.
- Mansur, L.M. and Orf, J.H. (1995): Agronomic performance of soybean recombinant inbreds in northern USA and Chile. Crop Sci. 35: 422-425.
- Molnar, I. (1977): Znacaj fotoperiodizma u formiranju prinosa kulturnih biljaka. Zbornik za prirodne nauke Matice Srpske, 53: 117-128.
- Ouattara, S. and Weaver, D.B. (1995): Effect of growth habit on yield components of late-planted soybean. Crop Sci. 35: 411-415.
- Panter, D.M. and Allen, F.L. (1989): Simulated selection for superior yielding soybean lines in conventional vs. double-crop nursery environments. Crop Sci. 29: 1341-1347.