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Abstract

Earliness is treated as plant ability to develop rapidly and to mature easily. Criteria for measuring earliness are discussed : number of days from seedling emergence to boll opening, number of nodes to first sympodium, percent of final yield harvested at first picking(s), etc. Short periods of bud and boll development, high rates of flowering and boll opening, low fruit shedding and heavier bolls all contribute to improve the course of yield accumulation. Breeding early maturing varieties is considered as the best method of improving earliness. Early maturing is often negatively correlated with some other traits, e.g. fiber length. To overcome this undesirable association by hybridization, mating of very early maturing varieties with moderately early or even late maturing ones performing good fibre length is recommended along with backcross. Following this procedure, the new early maturing varieties Beli Izvor, Garant and Balkan have been developed in Bulgaria which combine earliness and high productivity with good fibre properties. These varieties are now cultivated in Bulgaria, Yugoslavia, Romania, and Albania and are widely used as donors of earliness in many breeding centers. Due to their good adaptability, they are the top yielders in the variety tests in Italy, Spain and France overyielding the other entries by up to 55 per cent.

The effect of some cultural practices such as seedling protection and date of planting, plant spacing, harvest-aids application, etc., on earliness is also discussed.

The lack of continuity in the research activity was the main cause for which the first results in this field were obtained only in 1983.

Breeding targets for optimizing precocity

Precocity is a synthetic feature of cotton crop concretized by the ability of a certain cultivar to achieve a great part of early yield due to some morphophysiologic features of the plant.

Due to the gradual formation and ripening of cotton fruits, along a two month period, the quantity of early yield is influenced both by the cultivar precocity and yielding ability.

The Brinceni cultivar harmoniously combines the good yield capacity with the precocity and fibre quality, a fact which is pointed out by the experiment results obtained in the period 1980-1984.

Thus, the total yield of raw cotton of 2 280 kg/ha and 850 kg/ha lint cotton of the Brinceni cultivar are practically equal with those of the Cirpan 433 cultivar (2 190 kg/ha respectively 800 kg/ha), a fact which demonstrate similar yield potentials.

The yield of raw cotton and lint cotton achieved in September which represents the most important part of the total output, as it is not affected by bad weather, points out the precocity of the Brinceni cultivar.

Thus, with the Brinceni cultivar, the early yield of September (1 290 kg/ha raw cotton and 480 kg/ha lint cotton), represents 67-80 per cent of the total yield as compared to 40-45% with the Cirpan cultivar .

In the achievement of an increased early yield with the Brinceni cultivar (500 kg/ha raw cotton and 190 kg/ha lint cotton), there contributed both the vegetation period shorter by 8-12 days as compared to the Cirpan 433 cultivar as well as the faster rate of boll opening

The fibre quality of the Brinceni cultivar is superior to the cultivar from which it was extracted (fiber length greater by 1 mm).

The sufficiently high insertion of the first boll as well as the semi-compact boll grouping around the main stem offers in the Brinceni cultivar an average suitability to combine harvesting.

In 1985, the Brinceni cultivar covered a surface of over 600 ha and is presently going to expand in the areas favourable for cotton cultivation in our country.

Cotton breeding carried out in Romania until now permitted the gathering of a rich biological material.

The first results obtained after the complex testing at suboptimal temperatures and with pathogens pointed out the importance for breeding of some germoplasms, characterized by an improved resistance.

Presently, field testing is being continued in order to confirm the possibility of their sowing in an earlier period, which would indirectly contribute to the increase of the early cotton yield.

The genetic progress achieved in the last years at the main indicators for precocity optimization with the Brinceni cultivar as well as the variety of the existing biological material indicate new possibilities for improving the results.

Thus, there is the possibility of further shortening the vegetation period. Nevertheless, due to the strong negative correlation that exists between the short vegetation period and the yield capacity as well as between the latter and the quality fibre, for the time being, there are minimum chances of achieving cultivars competitive to the ones grown at present.

Some lines that are now in course of being tested are characterized by a greater boll weight and by a high fibre content of the raw cotton, which directly contributes -even if the vegetation period remains at the level of the Brinceni cultivar- to an increased quantity of the early yield of raw cotton and lint cotton.

It seems that both the increase of the boll weight and the increase of the fiber content have to represent essential targets in the direction of optimizing the precocity of cotton in Romania.

The selection pressure exerted by the specific climate conditions existing in our country, together with the application of an efficient breeding programme will permit the creation in future of a germoplasm with an emphasized character of precocity.