Cotton breeding for precocity in Romania

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Optimizing the precocity of cotton cultivars is one target included in the breeding programmes of the countries cultivating this crop. This target is imposed either by the insufficiency of climatic resources (thermic and sunlight deficit), the coincidence of some unfavourable factors with the harvesting period (abundant rainfalls, pests attack), or by strictly economical reasons such as : reduction of pesticides application, economy of irrigation water, achievement of two crops on the same surface (cotton crop as second crop).

Placed around 44° parallel, Northern latitude, the cropping area of cotton in Romania represents the Northern limit for cultivating this crop. Under these conditions, cotton grows and reaches maturity normally, on condition that in its vegetation period (May-October), the total daily average temperature sum is of 34° C, the sunlight duration is of 1500 hours and the rainfall reaches 300 mm (Balan, 1974).

During the last 12 years, the evolution of climatic condition (Figure 1) points out marked temperature and light deficits in comparison with minimum requirements of this crop, fact which affected unfavourably the cotton crop (in 1978, 1979, 1983) up to a total calamity (in 1976).

Under such conditions when during one third of the year the cotton crop is unfavourably affected, the achievement of some sufficiently early cultivars, ensuring a minimum yield, even during the less favourable years could increase the efficiency of this crop.

The breeding works for precocity have been carried out in Romania since 1950 with an interruption during 1960-1972 when cotton cropping was stopped.

Literature

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Cultivar	Vegetation period (emergence - ripennig) days	Dynamics of ripening (yield quantity) in september	Resistance to bacteriosis mark *
Cirpan 433 - control	116 - 122	40 - 45	2,5
Brînceni	108 - 110	67 - 80	1,6

Table 1: Physiological features in BRINCENI cultivar as compared to CIRPAN 433 cultivar (1980-84)

* mark 1: lack of attack
mark 2: weak attack
mark 3: medium attack
mark 4: strong attack

Cultivar	Mean weigth of cabolle g	Fibre output %	Fibre length on seed mm	Maturity index	Fibre resistance g.f. / fibre	Fibre fineness Nm
Cirpan 433 - control	5,4	36,0 - 36,5	27,9 - 29,6	1,5 - 1,7	3,6 - 4,6	5150 - 6450
Brînceni	5,6	36,5 - 38,1	28,6 - 30,6	1,5 - 1,7	3,5 - 4,8	5030 - 6300

Table 2: Quality indices in BRINCENI cultivar as compared to CIRPAN 433 cultivar (1980-84)

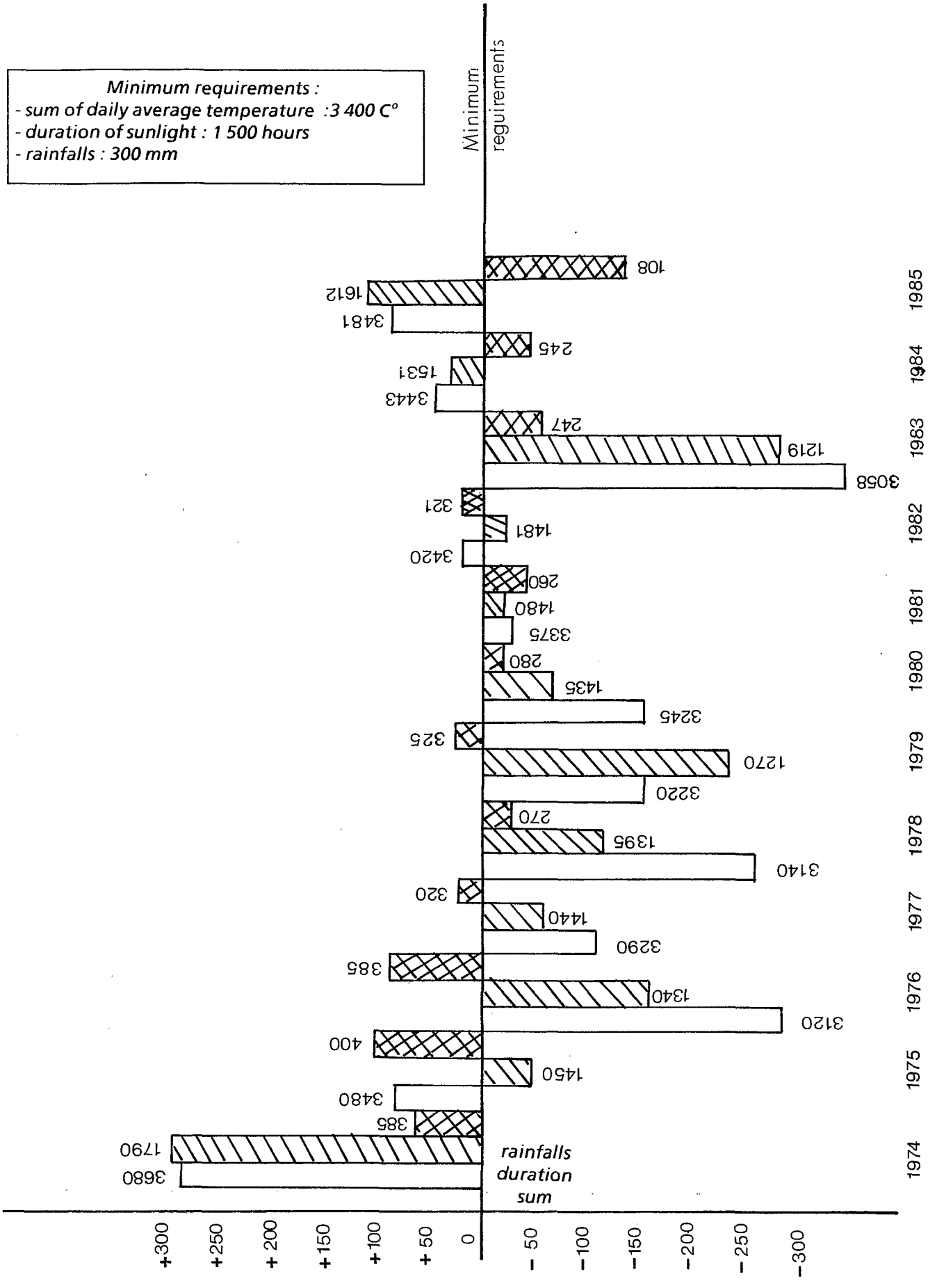

Figure 1 : Evolution of climatic conditions during 1974-1985 in the area favourable to cotton growing compared to the minimum requirements

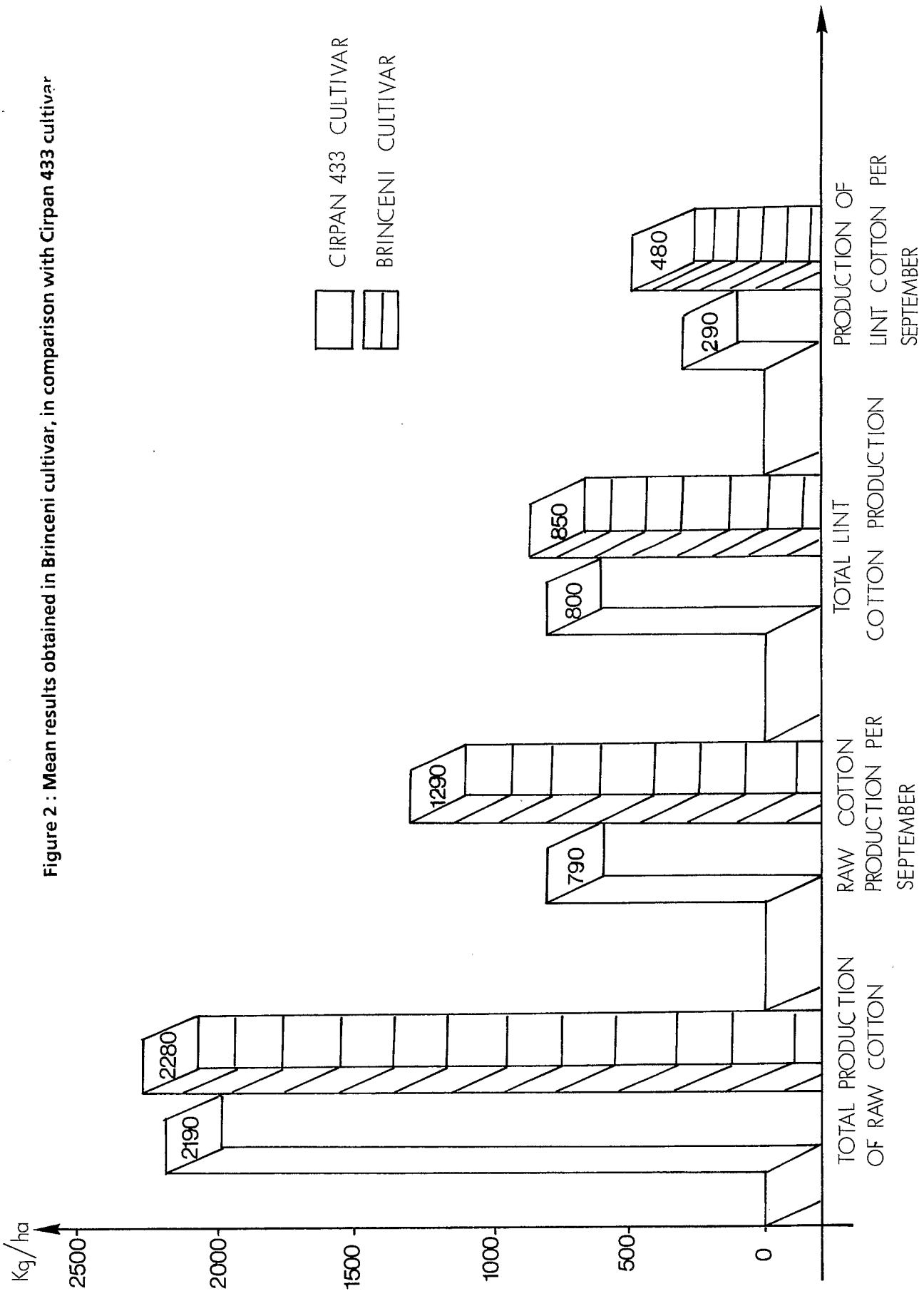

Figure 2 : Mean results obtained in Brinceni cultivar, in comparison with Cirpan 433 cultivar

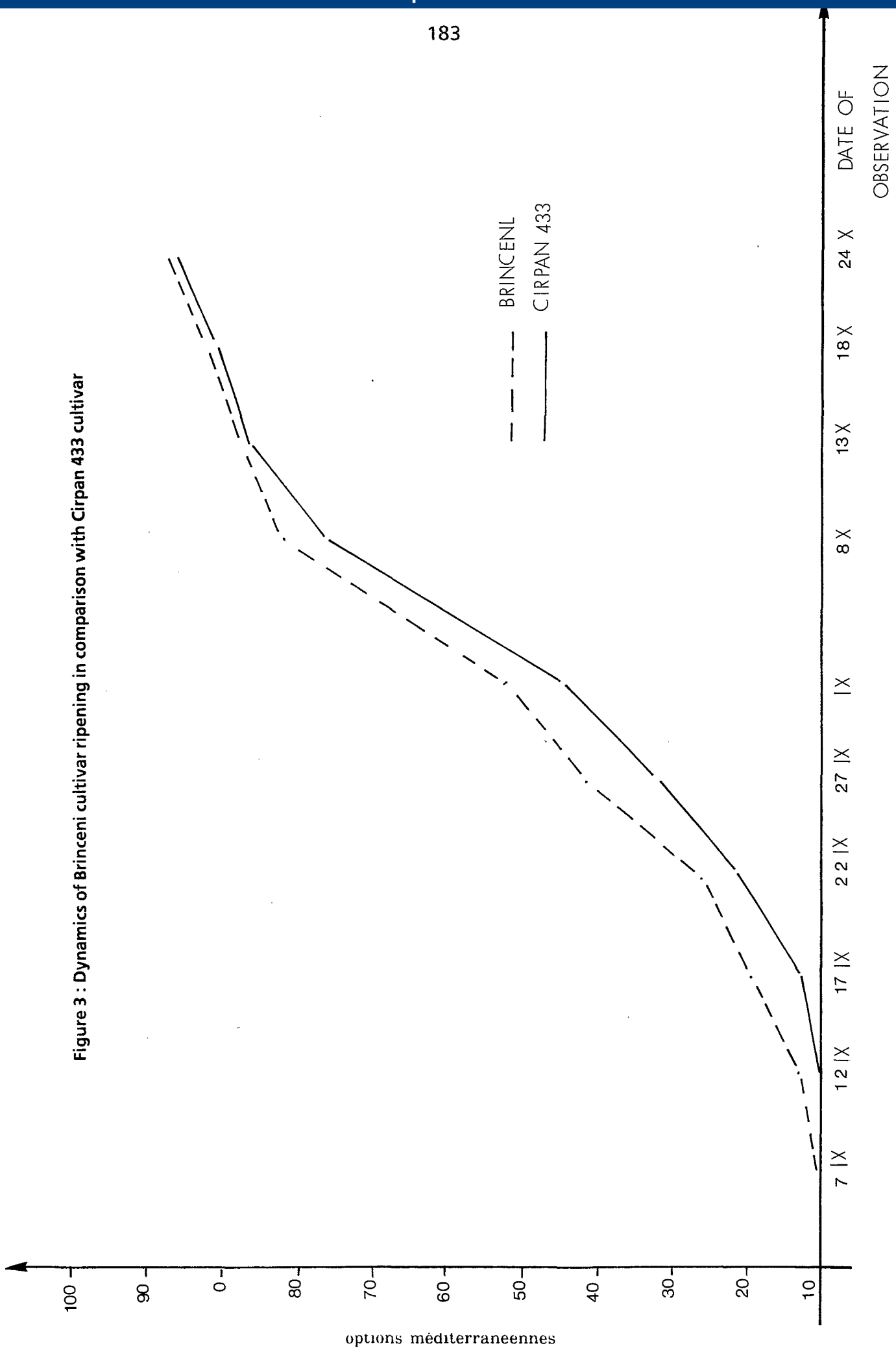

Figure 3 : Dynamics of Brinceni cultivar ripening in comparison with Cirpan 433 cultivar

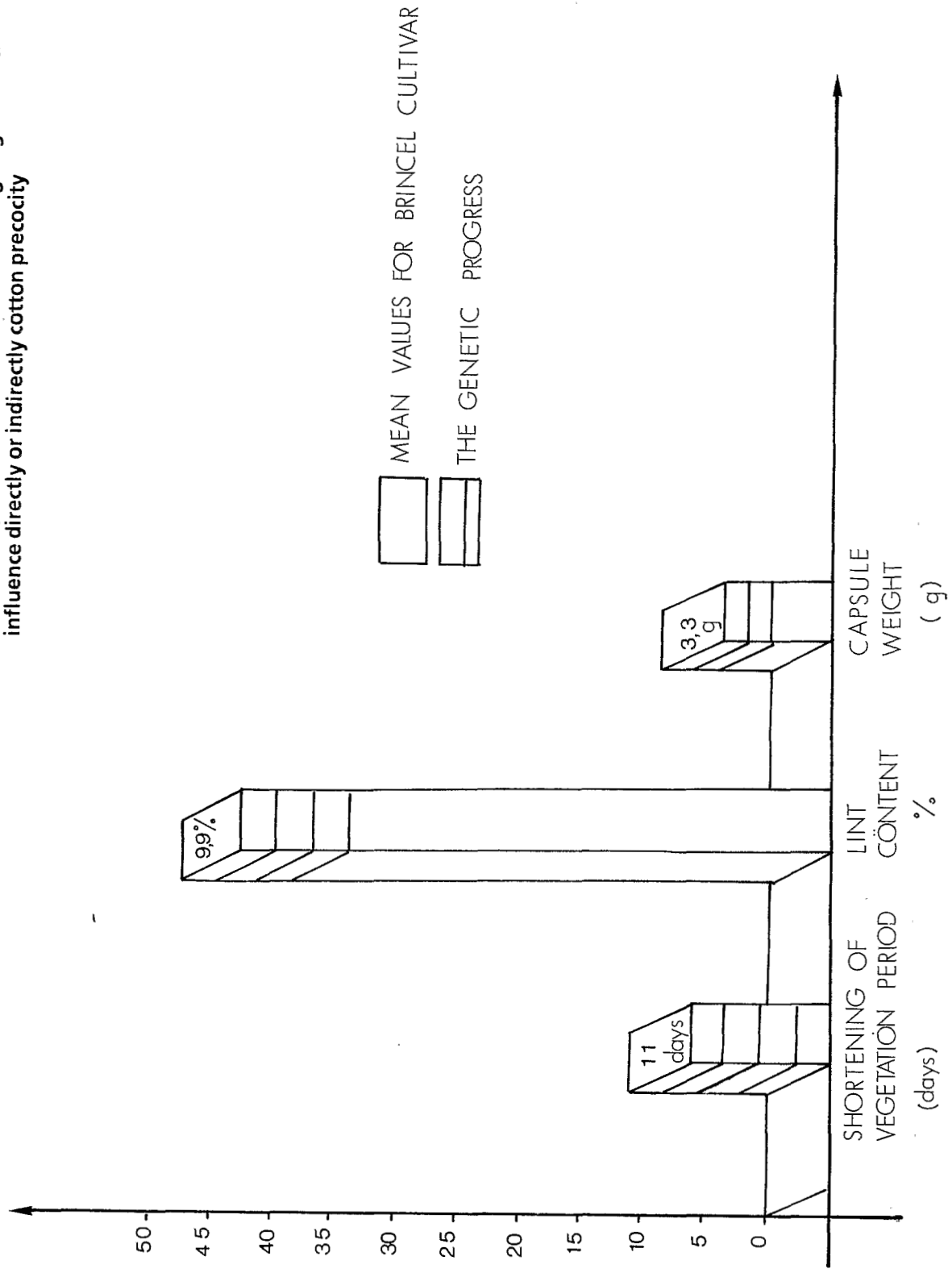

Figure 4 : The genetic progress obtained within the breeding targets which influence directly or indirectly cotton precocity