

Effect of phenological variation on photoperiodic sensitive sorghum production in the Sahel

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Studies were conducted to characterize diverse sorghums varieties adaptation to climate change at the Institut d'Economie Rurale (IER) of Mali in three sites covering latitude and rainfall gradients. Experimental sites were Cinzana Agronomic Research Station (600 mm rain fall, latitude 13° 15 N, longitude 5° 58 W); Sotuba Research Station (900 mm rainfall, latitude 12° 39 N, longitude 7° 56 W) and Farako research Station (1000 mm, latitude 11°21 N, longitude 5°46 W).

A split plot design with planting date as main factor and varieties as sub factor, in a randomized complete block design (RCBD) was used. 200kg/ha of “15N-15P205-15 K20 were applied 2 weeks after seedling emergence while 50kg/ha of urea (46N-0-0) were side dressed 4 weeks after seedling emergence.

Dates of phenological phases for each variety were scored from emergence to panicle initiation. Above ground biomass was also measured (stems, leaves, panicles).

Results indicated that most varieties react to variation in sowing dates by reducing their cycle (emergence to maturity) from 7 to 20 days from north to south gradients (13°N to 11°N). This is a consequence of varieties sensitivity to day length (photoperiod). Total biomass was reduced (50 to 800g m⁻²) with vegetative phases shortening. There exists great variability among varieties within and between sites on total biomass produced. This variability is due to threshold differences in varieties sensitivity to photoperiod. These results justify well the early sowing practices of Sahelian farmers which support reasonable use of their biodiversity in order to better exploit early rain falls. These practices are to mitigate climate change effects.

Keywords: sowing dates, photoperiod, biomass, sorghum, biodiversity and climate change.

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