

## Physiological variability parameters in growth and development in introgressed stay green lines of sorghum

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### SUMMARY

A field experiment entitled Physiological variability parameters in growth and development in introgressed stay green lines of sorghum [*Sorghum bicolor* (L.) Moench] was conducted at the Experimental Farm of Sorghum Research Station, Marathwada Agricultural University, Parbhani. The introgressed stay green genotype S35SG 06026 recorded more plant height, number of leaves per plant, leaf area per plant, leaf area index, length x breadth of leaf, over other genotypes and all the checks at all growth stages under rainfed condition. The introgressed genotype S35SG 06027 flowered earlier than other genotypes and checks, The mean leaf dry weight was more in introgressed genotype S35SG 06026 followed by S35SG 07001. The Introgressed stay green genotype S35SG 06026 and S35SG 07001 showed maximum total dry matter and chlorophyll content per plant throughout the period of crop growth over other genotype and all the checks. Introgressed stay green genotype S35SG 06026 expressed more AGR. The introgressed line S35SG 06026 expressed more RGR followed by S35SG 07001. Introgressed stay green genotypes S35SG 06026 and S35SG 07001 recorded higher NAR than all other genotypes and checks. The introgressed stay green genotype S35SG 06026 recorded highest crop growth rate over all other genotypes and checks. Introgressed stay green genotype S35SG 06026 recorded significantly higher green and dry fodder yield over all the checks

**Key words :** Introgressed, Stay green, Physiological variability growth development in sorghum

**S**orghum [*Sorghum bicolor* (L.) Moench] is self pollinating crop and belongs to gramineae family. Sorghum is the fifth most important cereal crop in the world. It is dietary staple food of more than 500 million people in more than 30 countries of Africa, Asia, Oceania and the America. Sorghum carries out C4 photosynthesis which makes it adoptable to fluctuating environmental condition. Drought stress is the second most important abiotic constraint after soil nutrient deficiency for sorghum production globally. It is well adopted to semi-arid environment as it makes efficient use of available water in the soil under limited water conditions. Hence, it is regarded model crop for studying drought tolerance among grass species. Drought condition may occur at any stages of its growth which cause premature leaf senescence which in turn may be leads to stalk lodging and significant yield losses. The plant character associated with tolerance to terminal drought is called “stay green”. In stay green senescence start on schedule but proceeds thereafter comparatively slow and chlorophyll in retained. The

character is consider as valuable trait as it improves, genotype adaptation to drought stress condition. The lines are photosynthetically active as compared to genotypes not possessing this trait.

Therefore, the study was undertaken among the character of S35 based stay green QTLs introgressed backcross progenies to assess to study the variability parameters in growth and development.

### MATERIALS AND METHODS

Experiment was conducted at the Experimental Farm of Sorghum Research Station, Marathwada Agricultural University, Parbhani during *Kharif* season (2008-09). Soil was medium black with moderate moisture retention capacity. Experiment was conducted on 24 genotypes in Randomised Block Design with three replications. The seeds were sown by dibbling method with 45 cm x 15 cm spacing with net plot size 2.70 m x 1.35 m. All the recommended packages of practices were followed to grow the crop. The five samples plant from each line were harvested separately and bagged properly after labeling it. These five plants were selected from each plot for recording biometric observations. The observations were recorded on characters *viz.*, plant height, number of leaves, length x breadth, leaf area per plant, leaf area index, days to 50 per cent flowering, days to physiological maturity, chlorophyll content, total dry weight per plant, green fodder yield, dry fodder yield. The absolute growth

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