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Documentation of cultivation practices of cotton in different soil types*

Cotton as a crop as well as commodity has a unique place in the economy of India as it plays an important role in the Agrarian and industrial activities of the nation. Being grown in acreage of 8.4 million hectares with the production of 30.5 million bales and productivity of 568 kg ha^{-1} (James Clive, 2009). The deployment of Bt cotton over the last eight years has resulted in India becoming the number one exporter of cotton globally as well as the second largest cotton producer in the world. The productivity of India's average is low compared to first largest producer of Bt cotton. Cotton production is affected by genetic potentiality, soil, climatic conditions and management factors. Improved understanding of factors that limit yield on farmers field is necessary to boost the production. To overcome the productivity limitations under varied agro-climatic conditions necessitates strategic and applied research on cotton. With this, an attempt has been made to document the existing cultivation practices of Bt cotton in different soil types in major *Bt* cotton growing areas of Bailhongal taluk of Belgaum district.

The study was conducted during the year 2008-09 and 2009-10 in major cotton growing areas of Bailhongal taluk in Belgaum district. The objective of the research study was to document the existing cultivation practices of cotton cultivation in different soil types of major cotton growing areas of Bailhongal taluk in Belgaum district. In black soil eleven villages and in red soil thirteen villages were identified for the study. The farmers from the study areas belong to eleven villages in black soil *viz.,* Govankoppa, Mugabasava, Belawadi, Budihal, Chikkabellikatti, Doddawada, Udikeri, Sampagaon, Bavihal, Turamari and Neginal and thirteen villages in red soil *viz.,* Siddasamudra, Hirebellikatti, Kadasagatti, Gudikatti, Budarkatti, Bidargaddi, Jallikoppa, Aaravalli, Patyal, Khodanpur, Sangolli, Garjur and Savatagi. From each of the selected villages, ten farmers and in some villages five farmers were selected by using random sampling. Thus, a total of 205 farmers were selected. The data was collected with the help of structured interview schedule which was prepared based on the objective of the study. The data was subjected to statistical analysis such as frequencies and percentages.

The survey on documentation of existing cultivation practices of cotton in black and red soils of Bailhongal taluk revealed that dibbling is the common method of sowing (100%) in black and red soils (Table-1). In black soils, majority of the farmers (68%) and red soil (31%) have grown Bunny Bt as compared to other cotton genotypes. This is in confirmity with the findings of Singh *et al.* (2003) and Giri *et al.* (2008), where the study indicated that on clayey soil under rainfed conditions MECH-162 *Bt*, MECH-184 Bt and NCS-145 Bt recorded higher yields against their non-*Bt* counterparts. Bt hybrids were found agronomically more efficient through the inbuilt resistance to Heliothis. Brahma Bt recorded higher yield of 2950 kg per ha in Alfisols (sandy loam) as reported by Raghu Rami Reddy and Dileep Kumar, (2010). Farmers in both black and red soils have used the recommended seed rate (450 g/acre)to the extent of (68%) in both the soil types. Lesser percentage of 20 and 22 per cent in both black and red soils have used more than the recommended seed rate. June I fortnight was the common time of sowing was observed in black (42%) and red soils (46%). The similar findings were reported by Pettigrew (2002), Hanumanprasad *et al.* (2000) and Subramanyam *et al.* (2004), where early planting in the June I fortnight contributed to a 55 per cent greater canopy, better light interception from the early planting and also due to earliness of Bt hybrid, which helped to mature early and thus avoided unfavourable weather conditions during later phases. Late planting of hybrids during July I fortnight was minimum 4 per cent in black and 2 per cent in red soils. Eighty eight per cent in black and seventy four per cent farmers in red soil have followed gap filling, very less percentage of farmers 12 per cent in black and 40 per cent in red soil have not followed gap filling. Farmers in the black and red soil area, gap filling was done using non-Bt seeds (50 g), which were provided at the time of purchase of *Bt* cotton seeds. Generally, gap filling was followed after 15 to 20 days of sowing. Percentage of farmers using refugia were found to be less in black (32%) and red (43%) soils (Table-1). The farmers are not aware of the advantage of refugia all round the Bt crop which serves as a resistance management strategy in Bt crop. The seeds which were brought along with the Bt seeds were used either for gap filling and sometimes not used by the farmer. The data on the plant density in black and red soils indicated that majority of the farmers in black (72%) and red (90%) soils have followed the spacing of 90 x 60 cm, 28 per cent of farmers in black soil and 15 per cent in red soil have followed wider spacing of 120 x 60 cm. In black soil area, farmers have followed intercropping of soybean, groundnut or greengram in wider spacing. This is similar to the findings of Rout and Satapathy (2001) obtained significantly higher seed cotton yield of 19.58 q ha^{-1} with 90 x 60 cm spacing and Bastia (2000) also recorded seed cotton yield (1940 kg/ha) and the harvest index (28.90%) for the spacing of 90 x 90 cm followed by 1795 kg ha^{-1} of seed cotton yield per ha and 27 per cent harvest index in 120 x 60 cm, nearly 72 per cent of the farmers in black and 65 per cent of the farmers in red soil have not followed nipping. Nipping was done around 100 to 120 days after sowing if the practice of nipping was followed. The survey data on the usage of fertilizer indicated that majority of the farmers in black and red soils have used below the recommended dose of N, P, K. The findings of Pawar *et al.* (2010) revealed that application of 100:50:50 kg NPK ha^{-1} recorded significantly higher seed cotton yield (2214 kg/ha), gross monetary returns (₹ 46865/ha) and net monetary returns (₹ 31131/ha) than both the lower levels of fertilizer application, 80-40-40 and 60-30-30 kg NPK ha^{-1}. The method of application of fertilizers indicated that 82 per cent of the farmers in black soil and 79 per cent of the farmers in red soil have applied nitrogenous fertilizers as basal and top dressing. Similar trend have been observed for phosphorus fertilizers, where 78 per cent and 77 per cent of farmers in black and red soils, respectively have applied as basal

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