

Arrowing in Sugarcane.

The flowers of sugarcane are technically known as "arrows." These arrows set seeds and canes can be obtained from them. But, as it is not easy to produce canes from these seeds, and as the canes obtained from them are not at all uniform, it is impracticable and unwise to grow them on large areas. On the other hand, this arrowing is of great scientific interest to the plant breeder. It is from these arrows that plant breeders of other countries have evolved, after careful and prolonged research, very good sugarcane seedlings with high sucrose content and good outturn, and saved the sugarcane industry of those countries from decay and possible extinction.

In India, the outturn from one acre of sugarcane is low and is on an average only about 1 ton. The outturn in the North Indian sugarcane tracts, where we have about 90% of the total sugarcane area in India, is lower still and the canes grown are very thin and of low sucrose content. Any small increase in the outturn per acre of sugarcane in those North Indian sugarcane tracts, will materially add to the wealth of the country. It is for the purpose of evolving good sugarcanes suited for the North Indian conditions that the Government have established near Coimbatore a Sugarcane Breeding Station. Coimbatore was selected for this purpose because, here sugarcane varieties arrow freely and are fertile. So far, the work at the station has been successful and very encouraging results have been obtained.

Apart from its scientific interest, a knowledge of, the signs of arrowing, conditions of arrowing and the effect of arrowing on the outturn of the crop, would be useful for the practical farmer.

Signs of arrowing:—Each variety before shooting forth its arrow gets into shot blade. The upper leaf-sheaths become enormously elongated and the laminae shorter. The top joint which produces the arrow is round and is much longer than the one below it. The top joints get pithy and this pithy portion gradually extends downwards.

Causes of arrowing:—Any condition that arrests growth appears to be the main cause of arrowing, e.g. want of drainage, want of sufficient

organic matter in the soil, water-logged condition, growing on poor land etc. Using sets from canes which had arrowed is also said to be another cause for arrowing.

Season:—Generally in these parts the arrowing season is from October to December. Canes planted in October and those planted in February arrow about the same time, though the former is about 13 months old and the latter only 9 months. This would appear to be due to one of the peculiar effects of season on the growth of crops.

The canes that arrow:—It is observed that the first formed canes of a clump only arrow, that is to say that if a clump has 5 canes and of these only 2 have arrows, these 2 arrowed canes appear distinctly older than the non-arrowed ones.

Effect of arrowing:—Arrowing ends the vegetative growth of canes. Hence, there is less tonnage obtained from an acre of land and the material for planting purposes will be much less on account of shooting.

Arrowing is no indication of the ripeness of canes, for, the arrowed canes give higher percentages of sucrose when periodically analysed afterwards.

EXAMPLES.

Variety.	Dates of analyses.	Not-arrowed.	Arrowed.	Remarks.
		Sucrose %	Sucrose %	
White mauritius.	5-12-10	15.90	16.90	} The canes were planted from the 1st Feb. to 25th Feb. 1910.
	17- 1-11	18.75	19.25	
	1- 2-11	17.80	18.65	
	17- 2-11	20.10	19.95	
	8- 3-11	18.50	18.30	
Striped cane.	5-12-10	17.10	18.25	} Do.
	17- 1-11	17.75	19.70	
	1- 2-11	19.10	19.30	
	17- 2-11	21.25	21.70	
	8- 3-11	18.75	19.50	

Chitta Rastali.	5-12-10	15.10	17.30	}	Do.
	17- 1-11	17.25	17.90		
	1- 2-11	17.85	18.65		
	17- 2-11	18.20	18.00		
	8- 3-11	18.44	17.60		
Barbados 208	24- 1-12		16.80	}	Do.
	24- 2-12		18.60		
	13- 3-12		19.25		
Vellai cane.	24- 1-12		15.30	}	Do.
	24- 2-12		16.65		
	13- 3-12		17.75		

I am indebted to Mr. Krishna Iyengar of Oorghally, Mysore, for kindly supplying me with the above figures. Besides the above a number of analyses were done here and they confirm the above results.

From the above figures it is seen that the arrowed canes start with a higher sucrose content than the non-arrowed ones. In the case of Chitta Rastali it will be seen that the arrowed canes reached their maximum sucrose content as early as 1-2-11 and began to deteriorate rapidly.

The arrowed canes on account of shooting and the formation of pith at the top joints deteriorate sooner than the non-arrowed canes and should not therefore be left unharvested growing on the ground much longer than about 2 months from the time of arrowing. It would be an advantage to harvest the arrowed canes first and sometime afterwards to take up the harvest of the non-arrowed canes. This would ensure uniformity in the ripeness of canes harvested and would save possible loss due to either over or under maturity.

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Green manure crops in the Periyar tract.

If a traveller from Madura nearing Kodaikanal Road looks at Vikramangalam hills to the west of the railway, he would notice the