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KEEPING QUALITY OF SUGARCANE SETTS OF THE POPULAR VARIETIES OF KERALA

S. Sukumaran Nair, K. Mathew Jacob and P. K. C. Nair

Sugarcane Research Station, Thiruvalla 689501, Kerala

It is a well known fact that the production of any crop is largely influenced by the quality of the seed material used. The seed material for cane production is drawn from the whole cane or from the top portion of the mature plant. In almost all the cane growing states of India, definite nursery programmes have been implemented where canes of about six months of age are used for preparing planting material after seed treatment. But in Kerala, a definite nursery programme is still to be implemented eventhough the state has about 10,000 hectares under sugarcane cultivation. The seed materials used by the cultivators of the state are the top 1/3 portion of the mature canes collected at the time of harvest and kept in the open or shade under cover of trash of canes. These materials are planted in the field either in the ridge and furrow system or in the pit system within a period ranging from 5-30 days after collecting the seed. Generally, no attempt is made to ascertain whether viable buds are present when the canes are cut into pieces with three eye buds. The present recommendation by the Kerala Agricultural University (Anon, 1978) is 35,000 to 40,000 setts per hectare.

In order to ascertain the keeping quality of the sugarcane setts and viability of buds of the four popular varieties of sugarcane grown in the state, a study was taken up at the Sugarcane Research Station, Thiruvalla during the year 1980-81.

Materials and Methods

The four popular varieties of sugarcane of the state viz., Co 997, Co 785, Co 449 and Co 62175 were studied, the treatments being periods of observation at intervals of 5 days. Top 1/3 portion of the nonflowered canes of each variety was cut into pieces with three viable eye buds. The varieties (consisting of 100 cuttings) with 4 replications under each treatment were kept in the open under cover of cane trash after recording their initial weight. The samples were examined at intervals of 5, 10, 15, 20, 25 and 30 days to ascertain the loss in weight, viability of buds and development of buds.

Results and Discussion

1. Weight of seed setts

The data presented in Table 1 give a comparative assessment of the percentage loss in weight in each variety according to the duration of storage This loss is important in cases where the seed materials are supplied in terms, of weight as is the practice in the departmental seed farms and sugar factories. This loss in weight is negligible in storage upto 5 days in all the varieties

Table 1

Percentage loss in weight of seed canes

Period of storage, days	Variety			
	Co 62175	Co 997	Co 449	Co 785
5	0.86	1.39	2.56	1.97
10	2.75	2.67	3.66	3.28
15	4.13	3.51	5.49	5.56
20	5.49	7.69	6.75	7.14
25	7.84	11.50	8.80	9.91
30	10.75	21.25	10.00	16.25
CD (0.01)	NS	5.39	6.40	7.89

Table 2

Percentage viability of buds of seed canes *

Period of storage, days	Variety			
	Co 62175	Co 997	Co 449	Co 785
5	91.17	89.25	88.30	88.58
10	90.70	83.58	79.30	86.00
15	79.00	79.00	75.30	77.17
20	76.50	77.71	54.30	7583
25	71.50	70.17	50.60	58.40
30	59.70	48.30	45.70	5380
CD (0.01)	8·06	9.88	9.62	9.02

*mesn number of buds initially kept — 300

Table 3

Percentage germination of buds of seed canes *

Period of storage, days	Variety			
	Co 62175	Co 997	Co 449	Co 785
5	18.30	8.75	9.25	6.75
10	27.30	29.50	13.25	16.58
15	33.30	31.50	15.67	29.00
20	46.30	40.58	19.00	35.70
25	54.60	41.42	27.80	39.90
30	56.80	43.25	29.75	45.80
CD (0.01)	9.37	6.15	8.15	6.49

*Mean number of buds initially kept = 300

A gradual increase in loss of weight is noticed as the duration of keeping increases. The maximum loss in weight is recorded in the variety Co 997 followed by Co 785. The statistical analysis of the data shows no significant difference in the percentage loss in weight in the case of Co 62175, but the same is significant for the other varieties like Co 997, Co 785 and Co 449. This clearly indicates that a higher tonnage of seed material is to be used for unit area as the number of storage days increases after harvest of the seed canes.

2. Viability of buds

The viability of buds is the most important criterion to be kept in mind when any variety is selected for planting. The data in Table 2 give the viability percentage of the buds of different varieties under normal storage conditions of the state. The buds remain viable to a fair degree upto 15 days duration after harvest of the seed canes, but the viability falls down drastically when the period of storage is extended to 25 and 30 days. In the case of Co 62175 and Co 997, the viability of buds remains upto 70% for the storage of even 25 days, and afterwards it comes down drastically. In the case of Co 449 upto 75% viability can be expected for storage of 15 days and thereafter the deterioration of buds is rapid. As regards Co 785 the buds remain viable up to 75.83% for storage of 20 days and the deterioration rate is rapid afterwards. The statistical analysis of the data shows significant differences in all the varieties for the viability of buds when the number of storage days increases. As has already been stated the setts are planted within a period ranging from 5-30 days after collection due to many reasons like nonavailability of labour, difficulty in transporting seed materials etc. It is quite evident from the above that for getting maximum germination the setts should be planted as early as possible after collection and keeping the same for longer period is an undesirable practice. The varieties studied differ in this character.

3. Germination of buds

Table 3 shows a comparison of the germination of buds among the different varieties in storage. The germination of the buds is rapid in the variety Co 62175 and slow in the variety Co 449. When 56.80% of the buds of the variety Co 62175 germinated within a storage period of 30 days only *29.75%* of the buds germinated in Co 449 during the same period. Co 997 and Co 785 are almost on par in this respect. The germination of the buds is statistically significant for the length of storage in all the varieties studied. The varietal character is manifested in this respect also.

Pre-germination and sprouting of buds on storage is an undesirable character as the same causes loss of seed material in transport and while handling the setts for cutting them into three budded pieces and distribution in the field for planting. The study therefore indicates the necessity of planting the setts as early as possible after collection.

Summary

In order to estimate the loss in weight of seed cane, viability of buds during storage and germination of viable buds, a study was taken up at the Sugarcane Research Station, Thiruvalla during 1980-81 planting season, with four popular varieties of the tract. The maximum loss in weight was recorded in the variety Co-997 during storage upto 30 days and the loss in weight was rapid after 25 days of storage in the varieties Co 997 and Co. 785. This loss in weight is important when the seed materials are supplied to the cane growers in weight basis. The buds in the four varieties studied remained viable to a fair degree upto 15 days after the collection of the setts and thereafter the vaibility was reduced drastically. This loss was maximum in the variety Co 449 and minimum in Co–62175. Co 62175 showed the maximum tendency for pre-germination of buds in storage and such behaviour was minimum in Co 449. Considering the loss in weight of the seed cane, loss in viability and germination of the buds during varying periods of storages, the safe margin was found to be 15 days. It is desirable that the setts are planted as early as possible after harvest of the canes.

സംഗ്രഹം

കരിമ്പ് നടുന്നrailന് തലക്കം ശേഖരിച്ച് കരിമ്പോല കൊണ്ടുമൂടി 30 ദിവസംവരെ വയ്ക്കുമ്പോഴുണ്ടാകുന്ന തൂക്കക്കുറവും മുകുളങ്ങളുടെ മുളയ്ക്കുന്നതിനുള്ള കഴിവും കിളിർപ്പും തിരുവല്ല കരിമ്പുഗവേഷണ കേന്ദ്രത്തിൽ വിശദമായി പഠിയ്ക്കുകയുണ്ടായി. Co 997 Co 449. Co 785, Co 62175 എന്നീ ഇനങ്ങളിൽ Co 997 എന്ന ഇനത്തിന്റെ തലക്കത്തിനാem" ഏറ്റവും കൂടുതൽ ഭാരനഷ്ടം ഉണ്ടാകുന്നതായി കണ്ടത്. ഇരുപത്തിയഞ്ച് ദിവസത്തിൽ കൂടുതൽ സൂക്ഷിക്കുമ്പോൾ ഉണ്ടാകുന്ന ഭാരനഷ്ടം Co 997, CO 785 എന്നീ ഇനങ്ങൾക്ക് ഒരു പോലെയാണ്. പതിനഞ്ച് ദിവസം വരെ കരിമ്പോല ഇട്ടുമൂടി സൂക്ഷിക്കുന്നതു കൊണ്ട് കിളിർപ്പിന് സാരമായ കോട്ടം സംഭവിയ്ക്കുന്നില്ല. തലക്കം സൂക്ഷിക്കുമ്പോൾ Co 62175 എന്ന ഇനമാണ് ഏറ്റവും വേഗം കിളിർക്കുന്നതായി കാണുന്നത്. ഇതു കാരണം തലക്കം മുറിയ്ക്കുമ്പോഴും നടുമ്പോഴും മുകുളങ്ങൾക്ക് നാശനഷ്ടം സംഭവിയ്ക്കുന്നു. എല്ലായിനം കരിമ്പിനങ്ങളുടേയും തലക്കം ശേഖരിച്ചുകഴിഞ്ഞാൽ എത്രയും വേഗം നടുന്നതാണ് അഭികാമ്യം.

Reference

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