

Research notes:

**GENETIC DISTANCE AMONG FIVE BOTANICAL VARIETIES OF
*CUCUMIS MELO****

Melons (*Cucumis melo* L.) are highly polymorphic species. India, being one of the secondary centres of origin of melons (Whitaker and Davis, 1962), is rich in wild and cultivated forms which vary considerably from one another for many of the morphological characters. Oriental pickling melon and snap melon are unique and have considerable variability in the Western Ghats. They are popular preserving and dessert melons cultivated especially in the warm humid tropical conditions of Kerala. The uniqueness of the above melons interested us to study their relationship and affinity with common melons like long melon, musk melon and snap melon.

The experimental materials comprised of five botanical varieties of *Cucumis melo* (*Cucumis melo* var. *conomon* Mak.—oriental pickling melon, *Cucumis melo* var. *inodorus* Naud.—musk melon, *Cucumis melo* var. *flexuosus* Naud.—snake melon, *Cucumis melo* var. *utilissimus* Duth and Full.—long melon and *Cucumis melo* var. *momordica* Duth and Full.—snap melon). All these five botanical varieties of *Cucumis melo* were viny in nature with green, pubescent and angular stem, elongated internodes, long and pubescent petioles, coiled tendrils, orbicular leaves with slightly serrated margin and blunt tip and yellow flowers. The five botanical varieties were grown in a randomised block design with three replications. The spacing was 1.4x3.0 m. There are four plants/variety/replication with two plants/pit. The genetic distance among the five botanical varieties was calculated considering four quantitative characters, nodes to first female flower, fruit weight, seeds/fruit and fruits/plant. The method suggested by Mahalanobis (1928) was used to estimate the total D^2 among the five varieties. The magnitude of D^2 indicated closeness/affinity among the varieties.

Maximum genetic distance of 12.49 was observed between musk melon and snake melon (Table 1). Long melon and snap melon were the closest ($D^2=0.38$). Musk melon and long melon were also placed distantly ($D^2=9.16$), followed by musk melon and snap melon ($D^2=8.79$). In the order of affinity the five melons could be arranged as oriental pickling melon, long melon, snap melon, snake melon and musk melon. The character fruits/plant contributed maximum to total divergence (80%) (Table 2). Seeds/fruit did not contribute to total divergence. Selection of botanical varieties based on fruits/plant would be a logical step in the selection of divergent parents in any hybridization programme.

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Table 1
Genetic distance (D^2) among the five botanical varieties of *Cucumis melo*

Parents	Musk melon	Long melon	Snake melon	Snap melon
Oriental pickling melon	5.29	2.62	3.88	3.40
Musk melon		9.16	14.49	8.79
Long melon			2.94	0.38
Snake melon				1.58

Table 2
Relative contribution of a few characters to total genetic divergence (D^2)

Characters	% contribution towards total D^2
Nodes to first female flower	10
Fruits/plant	80
Fruit weight	10
Seeds/fruit	0

സംഗ്രഹം

കന്നിവെള്ളരി, പൊട്ടവെള്ളരി എന്നീ മെലൺ ഇനങ്ങൾ കേരളത്തിലെ പശ്ചിമഘട്ടത്തിൽ ഉൽപ്പാദിച്ചവയാണ്. ഇനങ്ങൾക്ക് മാറ്റം മെലൺ ഇനങ്ങളായ മസ്ക മെലൺ, ലോങ്ങ് മെലൺ, സ്നേക്ക് മെലൺ എന്നിവയുടെ ജൈനിക അടുപ്പത്തെപ്പറ്റി പഠനം നടത്തി. അടുപ്പത്തിന്റെ അടിസ്ഥാനത്തിൽ അഞ്ചു ഇനങ്ങളെ കന്നിവെള്ളരി, ലോങ്ങ് മെലൺ, പൊട്ടവെള്ളരി, സ്നേക്ക് മെലൺ എന്നീ രീതിയിൽ തരം തിരിച്ചു വയ്ക്കാം. കായ്കളുടെ എണ്ണത്തിലുള്ള വ്യത്യാസത്തെ അടിസ്ഥാനമാക്കി ഇനങ്ങളെ സങ്കരണത്തിൽ ഉപയോഗിച്ചാൽ കൂടുതൽ ഉൽപാദനശക്തിയുള്ള ഇനങ്ങൾ ഉൽപ്പാദിക്കുന്നതിന് കാരണമാക്കാം.

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References

Mahalanobis, P. C. 1928. A statistical study at Chinese head measurement. *J. Asiatic Soc. Bengal*, **25** 301-377.
Whitaker, T. N. and Davis, G. N. 1962, *Cucurbits—Botany, Cultivation and Utilization*, Inter Publishers, Inc. New York. pp 62-130,250.



Fig 1. Oriental preserving melon *Cucumis melo* var. *conomon*