THE GENETICAL BEHAVIOUR OF *SCLEROSTACHYA* × *NARENGA* HYBRIDS AND THEIR BACK-CROSSES

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SCLEROSTACHYA AND *NARENGA* have been found to play a part in the chromosomal constitution of *Saccharum officinarum*. Parthasarathy[1] found that the basic complement of $n = 10$ chromosomes of *officinarum*, is composed of 2 different chromosome complements $n = 5$ each and one of these is similar to 5 chromosomal complement of *Sclerostachya*. Raghavan[2] found that these five chromosomes bore homology to 5 chromosomes of *Narenga* also. The homology of the second set of 5 chromosomes has yet to be ascertained. Thus *Sclerostachya* and *Narenga* appear to be very closely related genetically. The hybrids between these two genera show complete allo-syndesis;[3] nor is there any reciprocal non-identity suggestive of cytoplasmic inheritance. A few characters were chosen for study in these hybrids and back-crosses with their parents. These reveal a few interesting features which are presented in this short paper. The presence of circlet of hairs at the nodes of the flowering culms (*Narenga* character) is dominant over its absence. The occurrence of pedicelled and sessile spikelets (*Narenga* character) is also dominant over its absence (*Sclerostachya*). The absence of hairs on the upper surface of the leaves (*Sclerostachya* character) is dominant over its presence (*Narenga* character). In the matter of the presence of nodal buds in the flowering culms (*Narenga* character), its absence (*Sclerostachya*) is dominant. Table I gives the number of plants examined in regard to these characters and the observations made. It will be seen that except in the character of hairs on the upper surface of leaves, the deviation from expectation is not significant in respect of the other characters. Also the selfed progenies show no appreciable segregation and as such it may be assumed that these are fairly homozygous for most of the characters.

When back-crossed to the respective parents, the following observations were made: In characters like the circlet of hairs, occurrence of *pedicelled and sessile spikelets* whose presence in *Narenga* is dominant, the back-crossed progeny with the parents would appear to show the

TABLE I

Characters	*Narenga*	*Sclerostachya*	*Narenga* × *Sclerostachya*	*Sclerostachya* × *Narenga*
Circlet of hairs ..	+	−	+142 − 5	+105 − 3
Hairs on upper surface of leaves	+	−	+24 −84	+ 37 −110
Spikelets Pedicelled & Sessile (PS); Both Pedicelled (PP)	PS	PP	PS=47 PP= 1	PS=44 PP= 1
Nodal buds	+	−	− 9	− 9

TABLE II

Parents			Circlet of hairs*	Spikelets †	Hairs on upper surface‡	Nodal buds§
Female	Male					
P′ 567/3 (*Naaenga* × *Sclerostachya*)	*Narenga*		+26 − 1	PS=27 PP= 0	+27 − 0	+26 − 1
P′ 567/3	*Sclero-stachya*		+ 4 − 4	PS= 4 PP= 4	− 8 + 0	− 8 + 0
P′ 567/3 (Self)			No survivals			
P′ 568/1 (*Sclero-stachya* × *Narenga*)	*Narenga*		+ 8 − 0	PS= 8 PP= 0	+ 8 − 0	+ 8 − 0
P′ 568/1	*Sclero-stachya*		+ 2 − 2	PS= 2 PP= 2	− 4 + 0	− 4 + 0
P′ 568/1 (Self)			No survivals			
Ikra	..		+24 − 0	PS=24 PP= 0	+ 2 −22	+ 2 −22
Ikra	*Narenga*		+14 − 0	PS=14 PP= 0	+12 − 2	+12 − 2
Ikra	*Sclero-stachya*		+ 5 − 4	PS= 5 PP= 4	+ 2 − 7	− 8 + 1
Ikra (Self)			+13 − 5	PS=12 PP= 6	+ 7 −11	+13 − 5

* + Present (*Narenga* dominant); − Absent (*Sclerostachya* recessive). † PS = Pedicelled & sessile (*Narenga* dominant); PP = Both pedicelled (*Sclerostachya* recessive). ‡ + Present (*Narenga* recessive); − Absent (*Sclerostachya* dominant). § + Present (*Narenga* recessive); − Absent (*Sclerostachya* dominatn).

expected ratio, *i.e.*, with the recessive parent, namely, *Sclerostachya*, we get the 1 : 1 roughly, while with the dominant parent, namely, *Narenga*, all the forms show the character in question. However, in characters like nodal buds in the flowering culms and hairs on the upper surface of leaf whose presence (*Narenga*) is recessive to their absence (*Sclerostachya*), the back-crossed progeny show this interesting feature. When back-crossed to dominant parent (*Sclerostachya*) all show absence of these characters which is as it should be. But when back-crossed to the recessive parent (*Narenga*), instead of the expected 1 : 1, all show the recessive character. It must, however, be admitted that the number of progeny available in these back-crosses is very limited and as such are not capable of statistical analysis. Even so it seems that in back-crosses with *Narenga* the deviation from expectation is highly significant only in respect of characters which are recessive in *Narenga*. Also it was noticed that survivals in these back-crosses are not very high and so far as selfed progeny of F_1's are concerned, there has been practically no survivals. Hence it has not been possible to study the behaviour of these characters in the F_2 population. Even so, it looks as if *Narenga* as the male parent exercises some influence in this matter, even though the character in question is recessive. It remains to be seen what the behaviour will be if *Narenga* and *Sclerostachya* are used as females and the F_1 hybrids as male. It may also be mentioned that the pollen fertility of the F_1's in either direction is well over 90 per cent. Why there are no survivals in the selfed progeny of these F_1's is not yet clear.

The expression of the characters mentioned above was studied in *Ikra* also. It was found that the genetical behaviour of *Ikra* is such as to confirm the belief that it is a natural hybrid between *Narenga* and *Sclerostachya*.[3] In other words, circlet of hairs was found to be present in the nodes of the flowering culm. Nodal buds were found to be absent in the nodes of the flowering culm. They were found to possess pedicelled and sessile spikelets, obviously the expression of dominance of *Narenga* character. In back-crosses with *Sclerostachya* and *Narenga*, the behaviour was also found to be the same, as if *Ikra* was the F_1 hybrid between the two genera, and the interesting feature is that in back-crosses to *Narenga* in which the presence of some *Narenga* characters like nodal buds and hairs on upper surface, is recessive to their absence, all showed the recessive character instead of the expected 1 : 1. This uniform behaviour of these back-crosses involving *Narenga* as the male parent both in *Ikra* as well as artificial hybrids of *Sclerostachya* and *Narenga* is something which is worthy of note.

Table II gives in an analytical manner the expression of the characters in *Ikra* and in the back-crossed progeny available for observation.

1. Parthasarathy, N., *Nature*, 1948, **161**, 211. 2. Raghavan, T. S., *Journal of Heredity*, 1951, **42**, 599. 3. Parthasarathy, N. and Subba Rao., K. S., *Proc. Ind. Sci. Cong.*, 1947.

INTERNATIONAL COMPUTATION CENTRE

THE Convention for the setting up of an International Computation Centre was signed at Paris on 6th December, 1951, by Belgium, Egypt, Iraq, Israel, Italy, Japan, Mexico and Turkey.

The Centre is to be in Rome, where the Italian Government has offered a wing of its National Research Council Building. It also has agreed to lend the Centre $ 75,000 without interest for ten years. All the library and documentation facilities of the National Research Council will be at the disposal of the Centre.

The Centre's annual budget is expected to amount to about $ 100,000, which will be made up from the contributions of its member states. For the first year, UNESCO will give the Centre a $ 15,000 grant and a loan of $ 60,000.