

## A Note on Oil Content in Asiatic Cottons, *Gossypium anomalum* and their amphiploids

Of the total area of 7.8 m. ha. under cotton, 28 per cent belongs to *G. arboreum* and 19 per cent to *G. herbaceum* (Rao, 1973). These two diploids, together referred to as Asiatic cottons, constitute 3.67 m. ha or 47 per cent of the total area under cotton in the country.

Four geographical races in *G. arboreum* (Hutchinson, 1950) are used in the improvement of Asiatic cotton varieties. Similarly, the wild diploid species *G. anomalum* which is closely related to the Asiatic cottons and which by virtue of its potentiality to transmit fibre fineness and strength, besides resistance to jassids and blackarm, is often being utilised in the improvement of Asiatic cottons by hybridisation and backcrossing (Marappan and Santhanam 1962 and Sree Rangasamy and Raman, 1963). Again by production of amphiploid combinations of Asiatic *anomalum* cottons, the transference of desirable traits to the tetraploid species of *G. hirsutum* and *G. barbadense* is also being attempted (Narayanan, 1972).

In the present study, the oil content in representative samples of ten Asiatic cotton races and *G. anomalum* besides two of their amphiploid combinations is reported. Though cotton is mainly grown for its fibre, cotton seeds which constitute nearly two thirds of the total crop yield constitutes a substantial percentage of oil which is edible after removal of gossypol and hydrogenation. The cotton

seed oil has many more important industrial uses also. Hence, a study of the range of oil content in the different races of Asiatic diploids and *G. anomalum* as well as their amphiploids may provide basic information of value to cotton breeders. Data of this kind are very much lacking in cotton breeding programmes.

Oil content was estimated in two representative samples of acid delinted seeds for each kind by the ether solvent method using Soxhlet apparatus and the oil expressed as per cent on dry weight basis. Colour of the oil was also recorded. The mean values of oil per cent are given in Table 1.

Oil content in *G. herbaceum* races ranges from 6.60 to 18.09 per cent, the mean for the species being 11.34. For *G. arboreum*, the range is from 13.13 to 18.70 per cent, mean value being 17.63. The wild species *G. anomalum* contains only 7.78 per cent, while the amphiploid combination of this species with *G. herbaceum* and *G. arboreum* have 16.66 and 18.45 per cent respectively. Though the *anomalum* and *herbaceum* cottons possess comparatively low oil content, at their amphiploid level, there is great improvement. It appears that the genes controlling oil content in the race *africanum* of *G. herbaceum* are distinct in action from the genes in race *sinense* of *G. arboreum*. The genes in *africanum* are able to give positive heterotic effect in the expression of oil content in its amphiploid com-



TABLE 1. Oil per cent in diploid *Gossypium* species

Sl. No.	Sample description	Mean per cent of oil*	Colour of oil
I.	<i>G. herbaceum</i> races		
1.	<i>africanum</i>	6.60	Methyl orange
2.	<i>acerifolium</i>	11.48	Dark brown
3.	<i>wightianum</i> (Dharwar-1)	9.20	-do-
4.	<i>persicum</i> (Afghanistan)	18.09	Orange
II.	<i>G. arboreum</i> races		
5.	<i>soudanense</i>	18.18	Dark brown
6.	<i>sinense</i> (New Million Dollar)	18.58	Dark brown
7.	<i>indicum</i> (K. 7)	18.70	Dark brown
8.	<i>cernuum</i> (Garó Hill 54)	18.52	Orange
9.	<i>burmanicum</i> (Bc-19)	13.13	Dark brown
10.	<i>bengalense</i> (sanguineum)	18.64	"
III.	<i>G. anomalum</i>	7.8	Dark brown
IV.	<i>Amphiploid combinations</i>		
1.	( <i>africanum</i> X <i>anomalum</i> )	16.66	Dark brown
2.	( <i>sinense</i> X <i>anomalum</i> )	18.45	-do-

\*Mean of two samples taken on dry weight basis

bination with *G. anomalum*. In the case of *arboreum* - *anomalum* amphiploid the low value for *anomalum* has not depressed the oil content at the amphiploid level and also has not appreciably improved beyond the level originally found in *arboreum*. The colour of oil in Asiatic cottons varied slightly while the oil of amphiploids were dark in colour. The information furnished in this

note will be of value to the breeders in charge of cotton improvement programmes with special reference to oil content.

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## Influence of Foliar Spray of Certain Pesticides on the Phyllosphere Microflora of Paddy

Leaf surface constitutes distinct microhabitat wherein complex inter-relationships exist between the different groups of microorganisms. The quantitative and qualitative change in the phyllosphere microflora of crop plants are caused by many factors like plant species, age of the plant, disease incidence, pest prevalence and environment (Last and Deighton, 1965; Sinha, 1965). The changes in the phyllosphere microflora of paddy due to application of various pesticides are presented in this note.

IR 20 variety of paddy was raised in wet lands of Tamil Nadu Agricultural University Experimental Farm. The crop was sprayed on the 20th day of transplanting with Carbaryl (N-methyl-1-naphthyl carbamate) (0.1 percent). Endrin (1, 2, 3, 4, 10 - hexachloro - 6, 7-epoxy-1, 4, 5, 6, 7, 8, 8 percent octahydro-1, 4-exo-5, 8-exodimethanonaphthalene) (0.02 percent), Fenthion (0,0-dimethylmercapto 3-methylphenyl thiophosphate) (0.01 percent), and Parathion (Diethyl p-nitrophenyl thiophosphate) (0.01 percent). Leaf samples from the