to the lack of pairing and the most common configuration was found to be 5 II + 4 I. However, data reveal irregular meiosis in 48% cells. Thakur and Singh[2], reported $n = 7$ as chromosome number of Atemoya and observed varying number of univalents in some of the cells.

The chromosomal separation in anaphase-I (Table III) was abnormal in 36% of the cells. Three chromosomal groups were also observed in some of the cells. This extra group of chromosomes was due to the formation of laggards which might have resulted from the failure of chromosomal pairing. Thakur and Singh[2], have also reported unequal anaphase separation and three groups of chromosomes.

TABLE III

Distribution of chromosomes at anaphase-I in Annona stemoya

Sl. No.	Extent of un/equal distribution	No. of cells	% of cells
1.	PMC's with equal distribution as 7:7	16	64
2.	PMC's with unequal distribution as (1) 6:8	1	4
	(2) 5:9	1	4
3.	PMC's with unequal distribution with laggards	7	28

The present study indicated high (43·9%) pollen sterility which is due to irregular meiosis (48%) and subsequent abnormal chromosomal distribution (36%). The low pollen fertility and germination finally hinder fruit setting in *A. atemoya*.

Marathwada Agricultural University,
Parahani,
August 28, 1975.

S. V. KSHIRSAGAR.
S. T. BORIKAR.
N. N. SHINDE.
U. G. KULKARNI.

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OLIGOGYNOPHORIA, A VIRUS INDUCED LESION IN THE GROUNDNUT, *ARACHIS HYPOGAEA* L.

FOLLOWING the report of the new virus, infecting the groundnut *Arachis hypogaea* L.[1], physiological alterations brought about by this virus on its host were studied. These studies[2] and field observations formed the basis for postulation of "oligogynophoria" as a pathological condition resulting in the host plant under the hegemony of groundnut chlorotic spot virus. The term "oligogynophoria"[2] was tentatively defined as "pathological reduction in the number of gynophores".

With an aim to obtain a clearer definition of oligogynophoria in the groundnut plant under viral influence, a batch each of healthy and infected (under apparent attack of groundnut chlorotic spot virus) plants were collected from fields near Nagari, Andhra Pradesh. A visual examination of the healthy and infected "fruit systems" revealed *prima facie* oligogynophoria (Fig. 1). Three types

FIG. 1. Oligogynophoria in groundnut (*Arachis hypogaea* L.) under the influence of groundnut chlorotic spot virus. Upper row—Healthy "fruit systems" ; Lower row—Virus-affected "fruit systems".

of gynophores were marked out for statistical processing[3] of numerical data. Fruiting gynophores : gynophores with terminal fruits with hardened shells ; headed gynophores : with terminal fruits in which no hardening of shell was noticeable[3] ; headless gynophores : bearing no terminal fruit (gynoecium) at all. The total gynophores (aggregate of fruiting, headed and headless gynophores of each fruit system) showed no statistically significant difference between healthy and affected plants (Table I). Viral attack evidently does not cause numerical diminution of gynophores, Even the headless gynophores (which probably represent flowers which were not cleistogamously fertilized) exhibited no statistical alteration under viral infection. On the other hand the "fruiting" and "headed" gynophores showed statistically significant alterations under viral influence. The numbers of fruiting and headed gynophores exhibited an inverse alteration under viral affectation : The fruiting gynophores were predominant in the healthy plant over headed gynophores and in the virus-affected plants, the "headed" gynophores were preponderant. In the healthy (virus-unaffected) plants greater number of headed gynophores should obviously have been driven into the condition of "fruiting" ;

TABLE I

Effect of groundnut chlorotic spot virus infection on the fruit system of the host, Arachis hypogaea *L.*

Parameter	Healthy	Virus-affected	*b*	*c*	*d*	*e*
Fruited gynophores	*a* 11·55± 2·32 (9)	2·0± 1·142 (10)	10·97	17	P < 0·001	− 82·68
Headed gynophores	4·78± 4·15 (9)	10·3± 4·58 (10)	2·741	17	P < 0·02	+115·50
Headless gynophores	8·22± 6·85 (9)	7·5± 4·03 (10)	0·283	17	N.S.	..
Total gynophores	25·56±10·96 (9)	19·8± 7·34 (10)	1·123	17	N.S.	..
Fruiting gynophores per cent total gynophores	56·10±26·31 (9)	11·95±11·09 (10)	4·684	17	P < 0·001	− 78·71

a: Values are means ± standard deviations; The numbers of observations are parenthesized.
b: calculated students '*t*' test value.
c: number of degrees of freedom.
d: level of significance: P < 0·02: significant; P < 0·001: highly significant; N.S.: not significant.
e: change in affected plant per cent healthy plant.

under viral influence, the process of "fruiting" of headed gynophores seems to be greatly retarded. Hence the oligogynophoria can be redefined as "pathological reduction of the number of fruiting gynophores or pathological retardation of the process of fruiting resulting in a smaller of headed gynophores reaching the stage of fruiting". The authors were informed by the farmers during the collection of the plants for the present study, that the "fruiting" gynophores alone persist as fruit. Oligogynophoria can therefore be taken as a well founded field lesion with considerably profound implication on yield economics of groundnut crop.

The studies on physiological alterations under the chlorotic spot viral influence in the groundnut plant[2] were confined to TMV-2 which is locally, a preferred variety for cultivation practices. But the infective action of this virus extends beyond this variety to many other groundnut varieties (TMV_3, HG_8, HG_{10}, Aceria mutand) and many more papilionaceous hosts also.

The virus has been shown[2] to act on its groundnut host and in other susceptible hosts[4], in the cotyledonotrophic stage of the growing seedling. It has also been indicated that the action of virus is directed at the metabolism of γ-methylene glutamine[2], the principal translocative source of nitrogen[5] in the "cotyledonotrophic" stage of groundnut plant. The pathological diversion of "nitrogen" available from this principal translocative source into the viral biosynthetic pathway has been indicated[2] to cause a "famine of nitrogen" exactly at a stage when gynophorogenesis occurs. This famine might be the decisive factor in bringing about retardation of the process of fruiting and resultant oligogynophoriac lesion. Added to this lesion, the number of root nodules occurring on the root system of the host plant also seems to be affected[6] leading to a further restriction of nitrogen supply and poorer increase in size of the "fruited" gynophores.

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Department of Botany, T. HARAGOPAL.
Government Junior College,
Nagari, A.P.,
and
Department of Zoology, V. CHANDRASEKHARAM.
S.G.S. Arts College,
Tirupati, A.P.,
September 22, 1975.

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