

## A Criticism of George, George and Herr's (1979) paper entitled, 'Comparative study of Ovule and Megagametophyte development in field-grown and greenhouse-grown plants of *Glycine max* and *Phaseolus aureus* (Papilionaceae)

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The ovule of *Phaseolus aureus* is bitegmic, crassinucellate and campylotropous. Though the outer integument is initiated later it grows faster and by itself alone forms the micropyle (Salgare, 1970,73d,75f,76e,j,k,t,78a,80a,86a,97a,b,2000a). However, George, George and Herr (1979) have stated that both the integuments are initiated simultaneously. This is an error due to their inability to get the earlier stages of integument development. The earliest stage which they have described (their Fig.14) is in fact, a more advanced stage and by 'no means the earliest. Hence a degree of confusion and misinterpretation has inadvertently been produced. The inner integument consists of two layers throughout its development and the outer integument which is bi-layered in the beginning becomes thicker. In one case it was observed that both the integuments were of the two layers. Normally outer integument reaches at the top of the nucellus at the megaspore mother cell stage. But in some cases it has been observed that even at the dyad and tetrad stage both the integuments are creeping at the base of the nucellus. Such a variability in the nature and behavior of the integuments in the same species of the Papilionaceae seems to be the first report. However, George, George and Herr (1979) were unaware of it. In addition to linear tetrads, T-shaped ones and an oblique T-shaped tetrad of megaspores are noted by Salgare (1970,73d,75f,76e,j,k,t,78a,80a,86a,97a,b,2000a) in *Phaseolus aureus*. George, George and Herr (1979) failed to note T-shaped and an oblique T-shaped tetrads which proved their superficial and misleading observations. Further they stated that the chalazal dyad cell divides unequally such that D (chalazal functional megaspore) is much larger than the a, b or c megaspore (their Figs. 19, 41, 42). Once again, from their Figures 19, 41, 42 it appears that they have mistaken a later stage for an earlier one, where the functional megaspore is considerably increased in size which accounts for their error of interpretation. So far there is no report of an unequal division of dyad amongst the Papilionaceae. Further an abnormal case was observed by Salgare (1970,73d,75f,76e,t,78a,86a), where the megagametophyte was having an extra nucleus – 9-nucleate. George, George and Herr (1979) failed to take notice of such anomalies. With such a superficial observations they are comparing the development of ovule and megagametophyte in field-grown with the greenhouse-grown plants.

**Key words :** Sweet sorghum, Vermicompost, Biofertilizers, Micronutrients

**A** consideration of phylogeny in relation to taxonomy within families of flowering plants using embryological data is today becoming an important tool supplementing other taxonomic information. Gametophyte reduction is customarily viewed by plant morphologists as maximized in angiosperms. When concerned with reduction in angiosperm sporophytes, we are immediately cognizant of that reduction in relation to systematics, *i.e.* indeterminate leaf-bearing branch contrasted with determinate, reduced branch – the flower. The very fact of gametophyte reduction intensifies the significance of that reduction to the extent that it becomes inversely proportional to the complexity of the developing structure (gametophyte).

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integument is initiated later it grows faster and by itself alone forms the micropyle (Salgare, 1970, 73d, 75f, 76e,j,t, 78a, 80a,86a) and Salgare and Dnyansagar (1971). Such a condition was also noted by Salgare in *Phaseolus aconitifolius* (1974a,75q,76p,97c), in *Alysicarpus vaginalis* (1975d,76d), in *Dumasia villosa* (1975z), in *Sesbania aculeata* (1975ab,76a,s) in *Sesbania aegyptiaca* (1976c,r) and in *Cyamopsis psoraloides* (1975as). However, George *et al.* (1979) have stated that both the integuments are initiated simultaneously. This is an error due to their inability to get the earlier stages of integument development. The earliest stage which they have described (their Fig.14) is in fact, a more advanced stage and by no means the earliest. Hence a degree of confusion and misinterpretation has inadvertently been produced. The inner integument consists of two layers throughout its development and the outer integument