Short Communication

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STRUCTURE, DISTRIBUTION AND TAXONOMIC IMPORTANCE OF TRICHOMES IN THE TRIBE *GOMPHRENEAE* (*AMARANTHACEAE*)

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The structure and distribution of the trichomes of *Alternanthera* (9 species) Gomphrena (2) and *Iresine* (2) of the tribe *Gomphreneae* is studied to evaluate the relationship among the taxa with reference to ecological and genetic factors. Certain unique features with its own speciality are also discussed along with the taxonomic importance of trichomes with regard to the members of the tribe *Gomphreneae*. Solereder (1908) and Metcalfe and Chalk (1950) reviewed the taxonomic importance of the trichomes in the family Amaranthaceae which is being used as an important tool in the field of plant systematics till to date. (Padmini 1991).

The peelings were taken from different parts (petiole, stem, peduncle, leaf, bract, bracteole, tepal and androecium/gynoecium of fresh as well as dried specimens of thirteen taxa of the tribe *Gomphreneae* (Table 1).

Ten trichome types were identified in the members of *Gomphreneae*. The distribution and structural variations of different trichome types are presented in table 1. In the *Gomphreneae* simple foot is present in most of the Uniseriate filiform types and this is distinguished by the presence of as many as the number of cell rows of the immediately overlying part of the trichome. On the other hand, simple as well as compound types are present in most of the Uniseriate macroform trichome types. Normally, the compound foot consists of cells which are more in number than the cell rows of the immediately overlying part of the trichome. Based on the structure (matured), Ramayya (1981) classified the trichomes into three categories like 1. Uniseriate filiform, 2. Uniseriate macroform and 3. Multiseriate trichomes.

In the present study 6 sub types of trichomes under category 1 i.e., Uniseriate filiform type, 4 sub types under category 2 i.e., Uniseriate macroform type and one sub type under Multiseriate trichome type were observed.

The taxonomic significance is evaluated on the basis of individual trichome types as well as trichome categories at different levels in the tribe *Gomphreneae*.

Table.1 Organographic distribution of trichomes in the members of Gomphreneae.

Name of the Taxon	Petiole	Stem	Peduncle	Leaf			Bract			Bracteole			Tepal			And/gyn
				ab	ad	m	ab	ad	m	ab	ad	m	ab	ad	m	
Alternanathera bettzickiana	FJ	FJ	#	FJ	FJ	FJ	FJ	—	C	CJ	—	C	CJ	—	C	—
A caracasana	DJ	DJ	#	DJ	DJ	DJ	—	—	—	—	—	—	J	—	—	—
A maritima	FJQ	FJQ	#	FJQ	FJQ	FJQ	—	—	C	CJ	—	—	J	—	—	—
A paronychioides	FJ	FJ	#	FJ	FJ	FJ	CJ	—	C	CJ	—	C	CJ	—	C	—
A philoxeroides	FJ	FJ	J	FJ	FJ	FJ	—	—	C	—	—	C	—	—	C	—
A porrigens	FJ	FJ	FJ	FJ	FJ	FJ	CJ	—	G	C	—	C	CK	—	G	—
A pungens	FJ	FJ	#	FJ	FJ	FJ	C	C	—	C	CK	—	C	—		
A sessilis	FJ	FJ	J	FI	FI	FI	G	—	G	G	—	G	G	—	G	—
A tenella	FJ	FJ	#	FJ	FJ	FJ	CJ	—	C	CJ	—	C	CJ	—	C	—
Gomphrena globosa	CJ	CJ	#	CJ	CJ	CJ	J	—	—	J	—	—	J	—	—	—
G. serrata	CJ	CJ	#	CJ	CJ	CJ	J	—	—	J	—	—	J	—	—	—
Iresine herbstii	DE	DE	DE	DE	DE	DE	DE	—	DE	DE	—	DE	DEO	—	DE	—
I. lendeni	DE	DE	DE	DE	DE	DE	DE	—	DE	DE	—	DE	DEO	—	DE	—

C. Uniseriate filiform capitate hair, D. Uniseriate filiform cylindric clavate hair, E. Uniseriate filiform ellipsoidal hair, F. Uniseriate filiform clavate hair, G. Uniseriate filiform cylindric hair, I. Uniseriate macroform conical hair, J.Uniseriate macroform osteolate conical hair, K. Uniseriate macroform osteolate anchor hair, O. Uniseriate macroform cylindric hair, Q.Multiseriate conical hair, # Organ absent.

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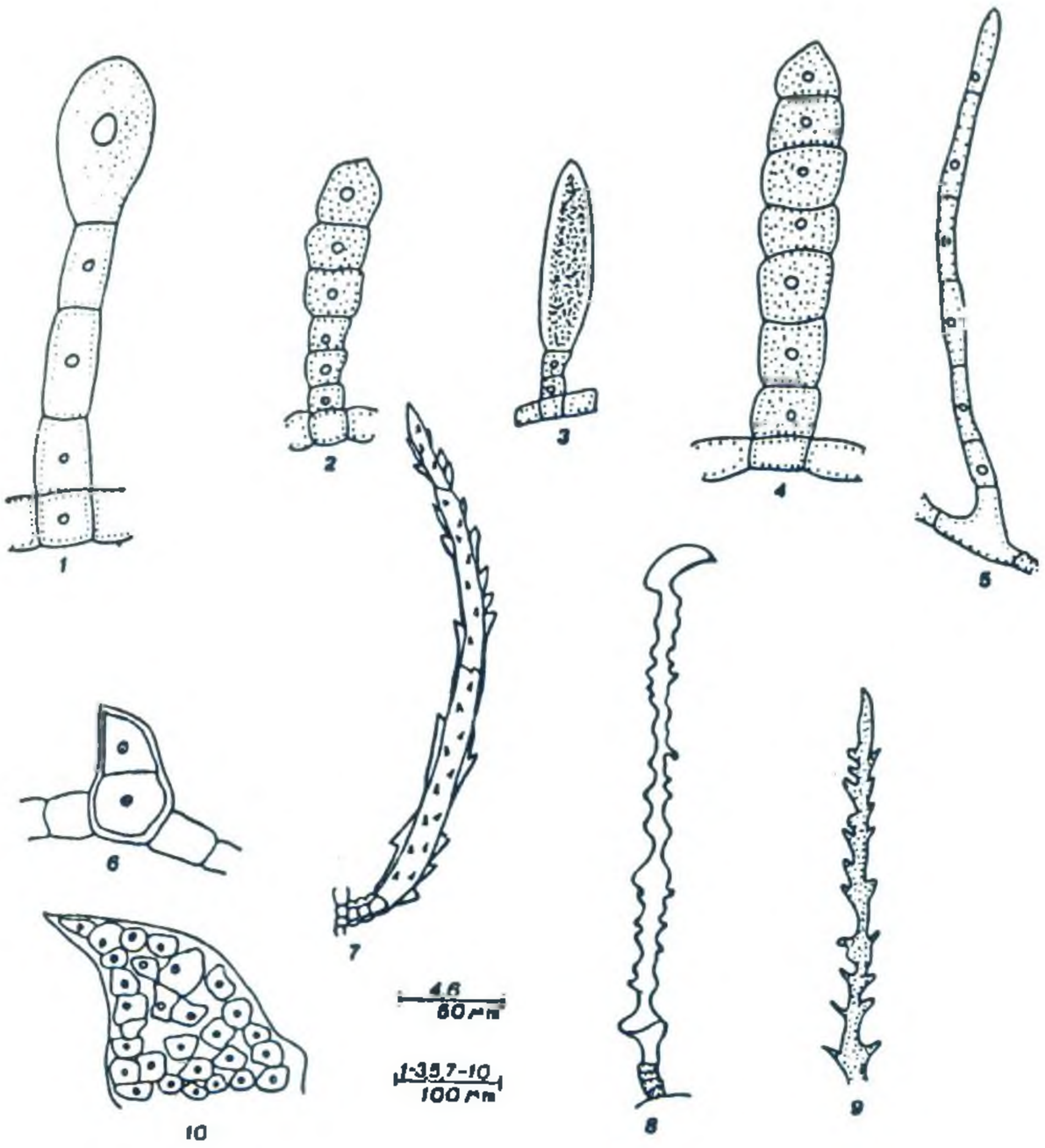

Plate : Trichome diversity in Gomphreneae :
Fig. 1. Uniseriate filiform capitate hair, 2. Uniseriate filiform cylindric clavate hair, 3. Uniseriate filiform ellipsoidal hair, 4. Uniseriate filiform clavate hair, 5. Uniseriate filiform cylindric hair, 6. Uniseriate macroform conical hair, 7. Uniseriate macroform osteolate conical hair, 8. Uniseriate macroform osteolate anchor hair, 9. Uniseriate macroform cylindric hair, 10. Multiseriate conical hair

Organographic distribution of trichomes in *Gomphreneae* were represented in table 1.

Genus level: The following genera can be identified on the basis of trichomes as they are exclusive in occurrence and hence of identification value.

Gomphrena-Uniseriate macroform osteolate conical hair, giving characteristic silky appearance on tepal.

Iresine-Uniseriate filiform ellipsoidal hair.

Species level: Exclusive presence of a particular trichome type is highly diagnostic in the identification of some of the *Gomphreneae* members studied such as

Alternanthera maritima - Multiseriate conical hair

A. pungens - Uniseriate macroform osteolate anchor hair

Based on the presence of unilocular anther lobes and uniovulate ovary, this tribe was separated from the other tribes (Bentham and Hooker 1862) and placed in the sub family *Gomphrenoideae* (Takhtajan 1980; Cronquist 1981).

The Unicellular trichome category which is commonly present in *Amarantheae* and *Celosieae* is interestingly absent in this tribe. Majority of the taxa in this study represent Diacytic type in addition to the Anisocytic and Anomocytic stomata.

Iresine, albeit, placed in *Gomphreneae*, has its certain unique features of its own which are not seen in the other members of *Gomphreneae*. In the present study Uniseriate filiform ellipsoidal hair is seen in two taxa i.e., *Iresine herbstii* and *I. lendeni*, whereas the remaining taxa show Uniseriate macroform osteolate conical hair which is characteristic of *Gomphreneae*. Therefore based on the epidermal evidence the two taxa *Iresine herbstii* and *I. lendeni* stand apart from the rest of the *Gomphreneae* studied. The reports of earlier workers on the differences based on pollen morphology (Reddy 1994) support the present view.

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