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ALTITUDINAL REPARTITION OF LILIACEAE IN THE POTOHAR AND ITS ADJOINING AREAS

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Analysing the orographic factor of the altitudinal repartition of *Liliaceae* in Potohar and its adjoining areas, two groups of species were noted: Steno-orophytes and euri-orophytes. Of all the species studied euri-orophytes (75.68 %) predominated the stenoorophytes (24.32 %). The maximum abundance of euri-orophyttes were found between 600 and 2400 meters elevation. Among the steno-orophytes 5 species were recorded at elevation between 1500 and 3000 meters.

Key words: Altitudinal, Repartition, Liliaceae, Potohar.

INTRODUCTION

Potohar region comprises of Rawalpindi/Islamabad, Jhelum, Attock and chakwal districts. This area lies between latitudes 32° 33′ and 34° 03′ north and longitudes 71° 39′ and 73° 37′ east. It is bounded on the north and northwest by Abbottabad and Mardan districts, on the East by Jehlum river on the Southeast and South by Jhelum and Sargodah districts, on the West by Indus River & Mianwali district. The area comprises mainly of a wide plateau, lying at 30° – 450 meters and a high mountaneous belt in the North-East and West, rising upto 2200 m., having ridges and narrow by intervening valleys. The altitude ranges from nearly 240 to 2206 m. with a almost steady rise from South-West to the North and rapidly to the North-East. There are some high peaks, rising above 1800 meters. In the sub-tropical areas of Rawalpindi, Attock, Jhelum and Chakwal districts the soil is generally dry with great variety of geological formation i.e. from limestone, shales and quartizites to crystalline rocks. The lower plains of the sub-tropical zone comprises of Siwalik rocks, mainly sandstone and multicoloured silt and clay. They soil tends to be light and sandy and of only moderate fertility. In the temperate zone the area is composed of rock formation of Himalayas and schists formation extending over quartzites, limestone and shales.

Liliaceae is a world wide family with about 240 genera and 4000 species. This family is reported to be represented in Pakistan by about 29 genera and 57 species (Stewart, 1972), whereas in Potohar and its ajoining areas 17 genera and 37 species are found. Although *Liliaceae* is split into sub-families like *Alliaceae*, *Smilacaceae*, *Asparagaceae*, *Colchicaceae*, *Trilliaceae* and *Ruscaceae* by some recent workers. We have kept the family intact.

MATERIAL AND METHODS

Plants belonging to *Liliaceae* were gathered from various localities of Potohar and its surrounding areas alongwith their orographic data. All the plants were identified. The identified plants were then checked at National Herbarium (RAW) and Quaid-i-Azam University Herbarium (ISL). Finally orographic data was analysed at Pakistan Museum of Natural History, Islamabad.

RESULTS AND DISCUSSIONS

According to the altitudinal analysis, out of the total 37 species studied 28 (75.68 %) were euri-orophytes and 9 (24.32 %) were steno-orophytes. The maximum abundance of the following euri-orophytic species were found between 600 and 240° meters elevation. *Allium griffithianum* Boiss., *A. farctum* Wend., *A. jacquemontii* Kunth., *A. neopolitanum* Cyr., Dipcadi hysudricum (Edgew.) Baker., *Scilla griffithii* L., *Colchicum aitchisonii* (Hook. f.) E. Nasir, Asparagus gracillis Pozle, *A. adscendens* Roxb., *Asphodelus tenuifolius* Regel, *Eremurus persicus* (Jub & Spach) Boiss., *Gagea pseudoreticulata* Vved., *G. amblyopetala* Boiss. & Heldr., *Tulipa stellata* Hook.f. etc (Table 1).

It has been observed that in Potohar and its adjoining areas there is a great attitudinal variation from Semi-arid hot sub-tropical winter/monsoon to humid cool temperate zones. This area covers an interval of about 2 latitude (32 33 and 34 03 north) and longitude (71 39 and 73 37 east) Change in altitude changes the climate, which in turn affects the vegetation. In studied areas it has also been found that vegetation varies not from altitude to altitude but in the same altitude also from place to place due to variation in the quantity of water available and the

Table 1. Orographic distribution of *Liliaceae* in Potohar and its surrounding areas.

Species	Altitudinal range (m)	Regions/Zones				
		R:1	R:2	R:3	R:4	R:5
Allium roylei Stearn.	1500–3000	P	–	–	–	–
A. victorialis L.	1500–3000	P	–	–	–	–
Asparagus filicinus Ham.	1500–3000	P	–	–	–	–
Lilium polyphyllum D. Don	1500–3000	P	–	–	–	–
Allium humile Khunth.	1500–3000	P	–	–	–	–
Trillium govanianum Wall ex Royle	1750–3000	P	–	–	–	–
Polygonatum geminiflorum Regel	2400–3000	P	–	–	–	–
Allium fedtschenkoanum Regel	3000–3200	P	–	–	–	–
A. tenuicale Regel	3000–3200	P	–	–	–	–
Allium carolinianum DC.	900–2700	P	P	–	–	–
Eremurus himalaicus Baker	900–2700	P	P	–	–	–
Fritillaria roylei Hook.f.	900–2700	P	P	–	–	–
Paris polyphylla Smith	900–2700	P	P	–	–	–
Polygonatum verticillatum All.	900–2700	P	P	–	–	–
Gagea elegans Wall ex Royle	1200–2400	P	P	–	–	–
G. dschungarica Regel.	1200–2400	P	P	–	–	–
Polygonatum multiflorum All.	1200–2400	P	P	–	–	–
Allium consanguineum Kunth.	1200–2400	P	P	–	–	–
Notholirion thomsonianum (Royle) Staph.	600–1800	P	P	P	–	–
Smilax aspera L.	600–1800	P	P	P	–	–
S. macrophylla Roxb.	600–1800	P	P	P	–	–
Gloriosa superba L.	250–1400	–	P	P	P	P
Allium farctum Wend.	250–1400	–	P	P	P	P
Dipcadi hysudricum (Edgew) Baker	250–1400	–	P	P	P	P
Scilla griffithii Hochr.	250–1400	–	P	P	P	P
Allium jacquemontii Kunth.	250–1800	–	P	P	P	P
A. griffithianum Boiss.	250–1800	P	P	P	P	P
Asphodelus tenuifolius Canan.	250–1800	P	P	P	P	P
Colchicum aitchisonii (Hook. f) E. Nasir	250–1800	P	P	P	P	P
Asparagus adscendens Roxb.	250–2400	P	P	P	P	P
A. gracilis Royle	250–2400	P	P	P	P	P
Colchicum luteum Baker	250–2400	P	P	P	P	P
Eremurus persicus (Jaub & Spach.) Boiss.	250–2400	P	P	P	P	P
Gagea pseudoreticulata Vved.	250–2400	P	P	P	P	P
G. amblyopetala Boiss and Heldr	250–2400	P	P	P	P	P
Tulipa stellata Hook.f.	250–2400	P	P	P	P	P

Abbreviations Used: R:1 = Humid Cool temperature region; R:2 = Humid moderately cool sub-tropical monsoon; R:3 = Sub-humid warm sub-tropical monsoom; R:4 = Semiarid warm sub-tropical winter/monsoon; R:5 = Semiarid hot sub-tropical winter/monsoon.

degree of expure of the locality to the sun and other micro-climatic differences.

A distinct orographic difference between euriorophytes and steno-orophytes was also observed, due to orographic, climatic and soil factors. The five regions were recognised, the Humid cool etc.), Humid moderately cool Sub-tropical monsoon (Lehtrar, Tret, Gora gali, Moargalla hills etc.), Subhumid warm Sub-tropical monsoon (Islamabad, Rawalpindi, Rawat, Kahuta, Mandra, Fateh Jang etc.), Semi-arid warm Sub-tropical winter/monsoon (Hassan Abdal, Gujar Khan, Attock, Taxila etc) and Semi-arid hot Sub-tropical winter/monsoon (Pindighab, Talagang, Jand, Lawa, etc). These climatic regions played a leading role in Liliaceae of Potohar and its adjoining areas. Climadiagrams have also been presented. (Figs. 1,2,3,4 and 5). Champion *et al.* (1965) the climate of Potohar area

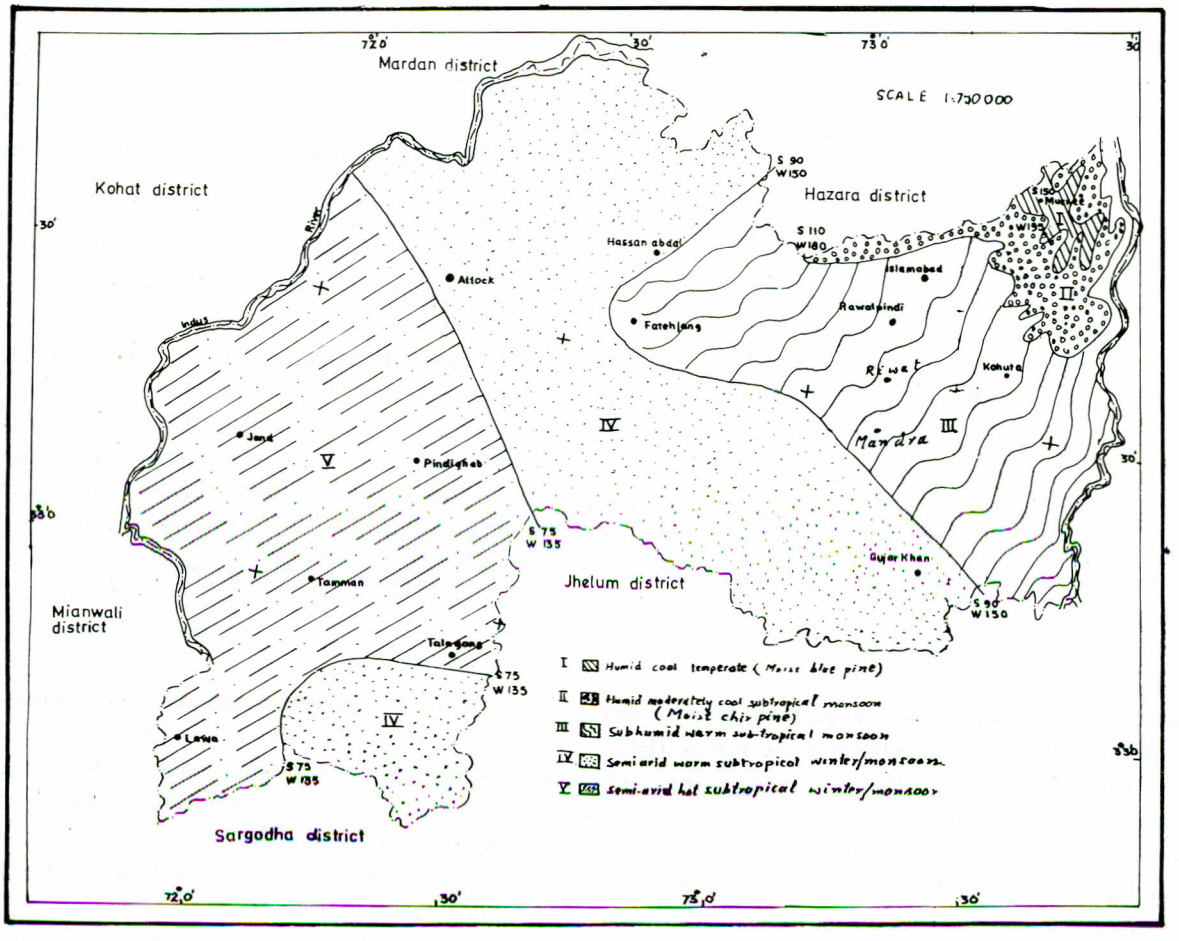

Fig. 1. Climatic regions of Potwar.

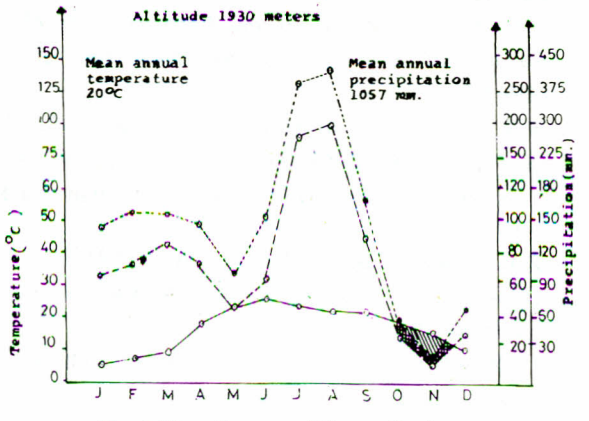

Fig. 2.Climadiagram of Murree Region.

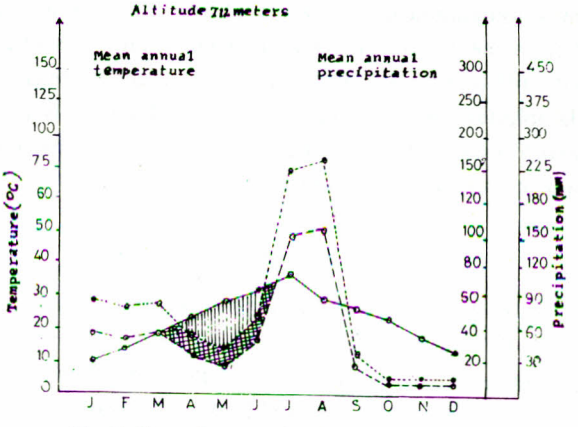

Fig. 3. Climadiagram of Kahuta Region III.

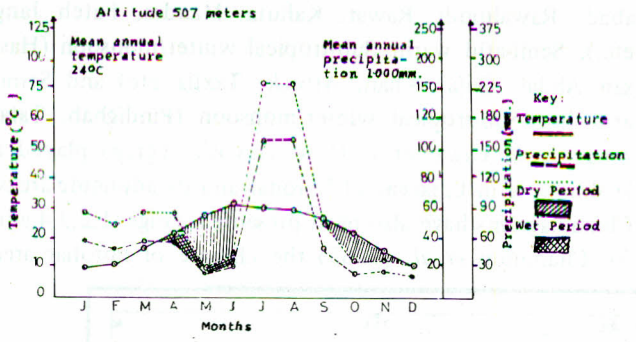

Fig. 4. Climadiagram of Rawalpindi Region III.

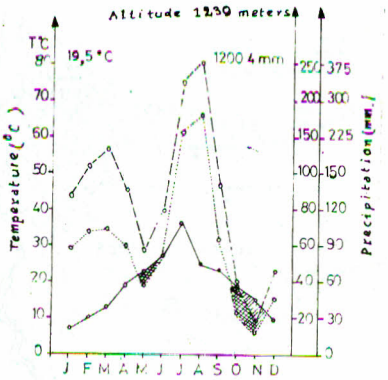

Fig. 5. Climadiagram of Tret Region II.

falls under two broad climatic regions i.e., Temperate and Sub-tropical.

According to our data all the steno-orophytic plants were collected from humid cool temperate humid zone. The plants were commonly found in patches and were also found under shrubby forest undergrowth and shades (Heliophytes). Due to the excess of humus, soil was acidic. The *Liliaceae* inhabiting these areas might be regarded as Oxalophytes. Two species namely *Allium fedtschenkoanum* Regel and *A. tenuicaule* Regel were collected between Mount Makra and Shogran (3000-3300) meters elevation) in Kagham valley. This difference was probably due to physiogeographical conditions of the area studied. However, some plants of *Liliaceae* were found in saline soils with pH (7.8 – 8.22). These plants might be regarded as Halophytes like *Colchicum luteum* Baker, *Asphodelus tenuifolious* Regel. etc. these plants are also considered as indicators of saline soils. (Table 1).

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