



**Full Length Article**

# Description and Distribution of a New Species, *Petrobia layyahensis* (Acarina: Tetranychidae) from Punjab, Pakistan

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## ABSTRACT

A new species of genus, *Petrobia* (Acari: Tetranychidae) has been reported first time from Punjab, Pakistan. *Petrobia layyahensis* n. sp. was collected from *Saccharum benghalensis* from Layyah, Punjab, Pakistan. The type was deposited in the Acarology Research Laboratories, Department of Agri. Entomology, University of Agriculture, Faisalabad, Pakistan.

**Key Words:** Acarina; Tetranychidae; *Petrobia layyahensis*

## INTRODUCTION

Mites are very small and microscopic organisms belonging to the subclass Acari and the class Arachnida consisting of a group of fauna of the Phylum Arthropoda. The presence of tetranychid mites are present on crops, vegetables, fruit plants, ornamental and forest plants as they are phytophagous in nature. They are also called as spider mites, because many of the spider mites spin webbing on the food plants.

The genus *Petrobia* (Acarina: Tetranychidae) was first reported by Murray (1877) and *Petrobia latens* Muller was designated as type species. Four species were re-described Pritchard and Baker (1955). Wainstein (1960) worked on the genus *Petrobia* and subdivided it into three subgenera; *Petrobia* Murray, *Tetranychina* Banks and *Mesotetranychus* Reck using the size of setae and presence or absence of setae on strong tubercles. Baker and Pritchard (1960) added one new species by each. Mason (1964) and Tuttle and Baker (1964) also added one and two species respectively. Chaudhri (1972) carried out taxonomic studies of the mites belonging to the genus *Petrobia* and described three new species from Pakistan.

Tan and Wang (1992) described a new species, *Petrobia xinjiangensis* sp. nov. of the genus *Petrobia* from Xinjiang province of China. Kamran and Afzal (2004) described a new species, *Petrobia kleptis* Kamran and Afzal of the family, Tetranychidae from Pakistan. Sabri and Afzal (2007) described a new species, *Petrobia afzali* Sabri and Afzal from Layyah (Punjab), Pakistan and also gave its distribution record in the Punjab, Pakistan.

A little research work has been done concerning the Tetranychidae in Pakistan. Keeping in view the economic importance of the tetranychid mites, the present project was

undertaken to study the systematics and biodiversity in order to explore the new species, their abundance, and distribution in different climatic regions of the Punjab, Pakistan. The present authors have recorded and described a new species of this genus from Layyah (Punjab Province), Pakistan.

## MATERIALS AND METHODS

**Collection localities.** Different localities were surveyed extensively for the collection of tetranychid mites in various climatic regions of the Punjab, Pakistan (Ahmad, 1951).

**Methods of collection.** The following two methods were used for the collection of mites.

**Sieve method.** This method was used for on the spot collection in the fields. A sieve was held over a piece of white paper and the different plant parts were shaken and beaten on it. The mites, which fell on the piece of paper, were collected and stored in 70% alcohol having a few drops of glycerin. The collection labels were put into the vials.

**Berlese's funnel method.** The samples of leaves of various plants were brought in the laboratory and this material was kept in the funnels for at least 24 h under the source of light. The mites moving away from light fell down into the beaker having 70% alcohol with a few drops of glycerin. These mites were stored in small vials and collection labels were placed into them.

**Preparation and examination of permanent slides.** The Hoyer's medium was used in the preparation of permanent slides. The slides of specimens were studied with the help of a high power phase contrast microscope. Drawings of different body parts of the mite were prepared out by using an ocular grid. With the help of stage and ocular

micrometer, the measurements of different body parts of the collected specimens were made in  $\mu\text{m}$ . The magnification is also given along with each drawing. New species were described in the present investigations following Chaudhri *et al.* (1974).

**RESULTS AND DISCUSSION**

**Description.** Description is presented for female, while that of male is not known.

**Dorsum.** Body 620  $\mu\text{m}$  long (without gnathosoma) and 500  $\mu\text{m}$  wide (Fig. 1A). Palp distal segment with 7 sensory and tactile setae, tibial claw well developed reaching the entire length of distal segment of palpus (Fig. 1C). Stylophore rounded anteriorly and with numerous papillae (Fig. 1B).

**Table I. Paratype sample collected from various districts of Punjab, Pakistan**

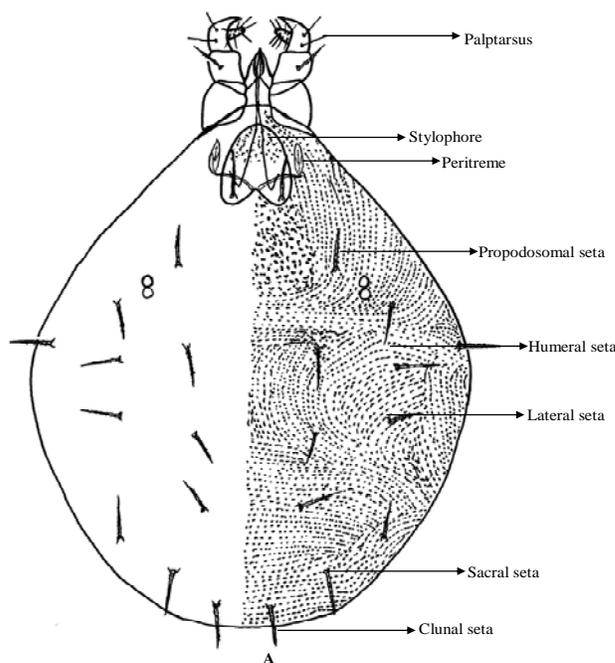
Locality	No. of Paratypes	Date	Source
Layyah	10	13-04-2005	<i>Saccharum benghalensis</i>
Bhakkar	9	14-04-2006	<i>Cynedon dactylon</i>
Okara	2	13-03-2006	<i>Azadirachta indica</i>
Sahiwal	3	14-03-2006	<i>Azadirachta indica</i>
Pakpattan	5	19-06-2005	<i>Saccharum benghalensis</i>

**Punjab collection localities**

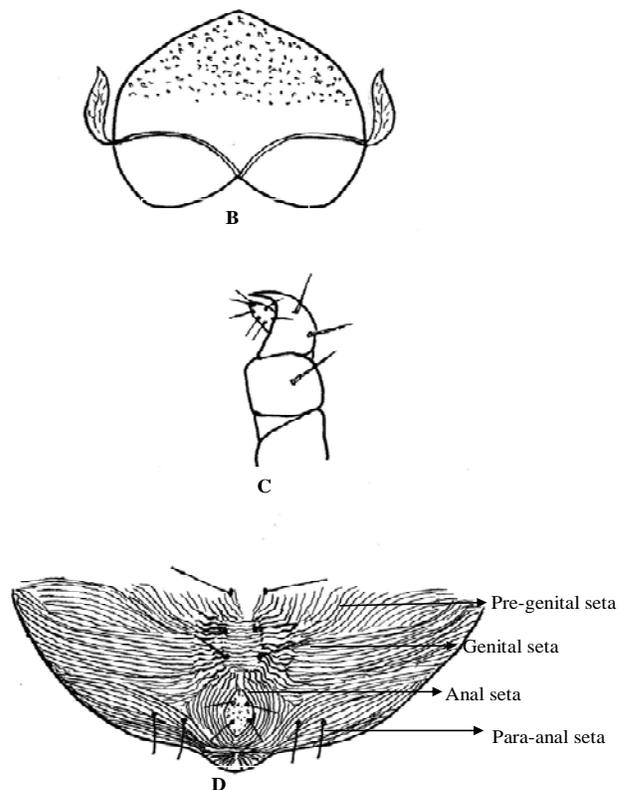
- A. Irrigated low land, (South West Punjab and Thal)
- B. Semi-rid (Central Punjab)
- C. Sub-humid (Sub mountain North)
- D. Eastern Un-irrigated Desert
- E. Sub Mountain West



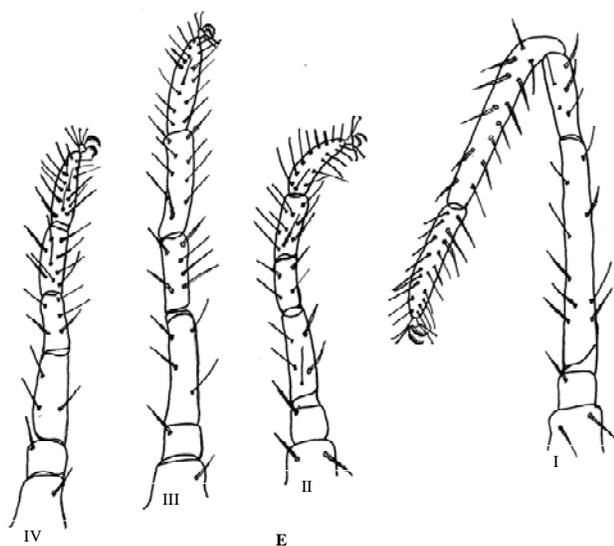
**Fig. 1. *Petrobia layyahensis*; A, dorsal side**



**Fig. 1. *Petrobia layyahensis*; B, Stylophore and Peritreme; C, Palp; D, Venter**



Peritreme enlarged distally in an elongated lobe as shown in Fig. 1B. Propodosoma pebbled in the middle and dotted irregularly, laterally (Fig. 1B). Hysterosoma with irregular,

**Fig. 1. *Petrobia layyahensis*; E, legs I-IV**

dotted striations, transverse between an anterior to central setae I, longitudinal between central setae II, transverse anterior to central setae III, anterior to inner central setae and posteriorly up to clunal setae, laterally irregular, longitudinal striations. Eyes, 2 pairs, 1 pair on each side. Dorsal setae, not set on tubercle, blunt ended; outer sacral and clunal setae not marginal on position. All setae shorter than interval between their bases. Propodosomal setae, 3 pairs, I, II, III, measuring 45  $\mu\text{m}$ , 37  $\mu\text{m}$ , 42  $\mu\text{m}$  long, respectively. Hysterosomal setae 10 pairs; central setae, 3 pairs, I, II, III measuring, 44  $\mu\text{m}$ , 38  $\mu\text{m}$ , 41  $\mu\text{m}$  long, respectively. Humeral setae, 1 pair, 37  $\mu\text{m}$ ; lateral setae, 3 pairs, 40  $\mu\text{m}$ , 38  $\mu\text{m}$ , 46  $\mu\text{m}$ ; outer sacral setae and inner sacral setae each 1 pair, both 53  $\mu\text{m}$  long; clunal setae, 1 pair, 49  $\mu\text{m}$  long (Fig. 1A).

**Venter.** Venter covered with dotted striations. Pregenital, genital, anal and Para anal setae, 1 pair, 2 pairs, 2 pairs, 2 pairs, respectively (Fig. 1D).

**Legs.** Legs, 4 pairs, very long and slender, segment with transverse striations. Leg I longest, 900  $\mu\text{m}$  in length; ratio of length of leg body and I length 1:5:1. Leg II –IV measuring 400  $\mu\text{m}$ , 420  $\mu\text{m}$ , 550  $\mu\text{m}$  long, respectively. Setae and solenidion on leg I-IV; coxae 2-2-1-1, trochanters 1-1-1-1, femora 9-5-3-4, genua 4-4-5-6, tibiae 13-9-9-9 and tarsi 19-15-14-15 (Fig. 1E).

**Etymology.** The species name is given after the type locality.

**Type.** Holotype female was collected from Layyah on 13-04-2005 from *Saccharum bengalensis* and deposited in the Acarology Research Laboratory, Department of Agri. Entomology, U.A. Faisalabad. Twenty-nine female paratypes collected from the following localities are summarized below in Table I.

Table I. Details of the paratypes collected from various areas in the province of Punjab, Pakistan

## CONCLUSION

*Petrobia layyahensis* closely resembles *P. latens* (Muller) but some characters like body striations, length of tibial claws, number of genital setae, setae and solenidion on legs I-IV and length of leg I differ in both.

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