MELANAGROMYZA OBTUSA — A SUITABLE SYSTEM FOR THE STUDY OF POLYTENE CHROMOSOMES

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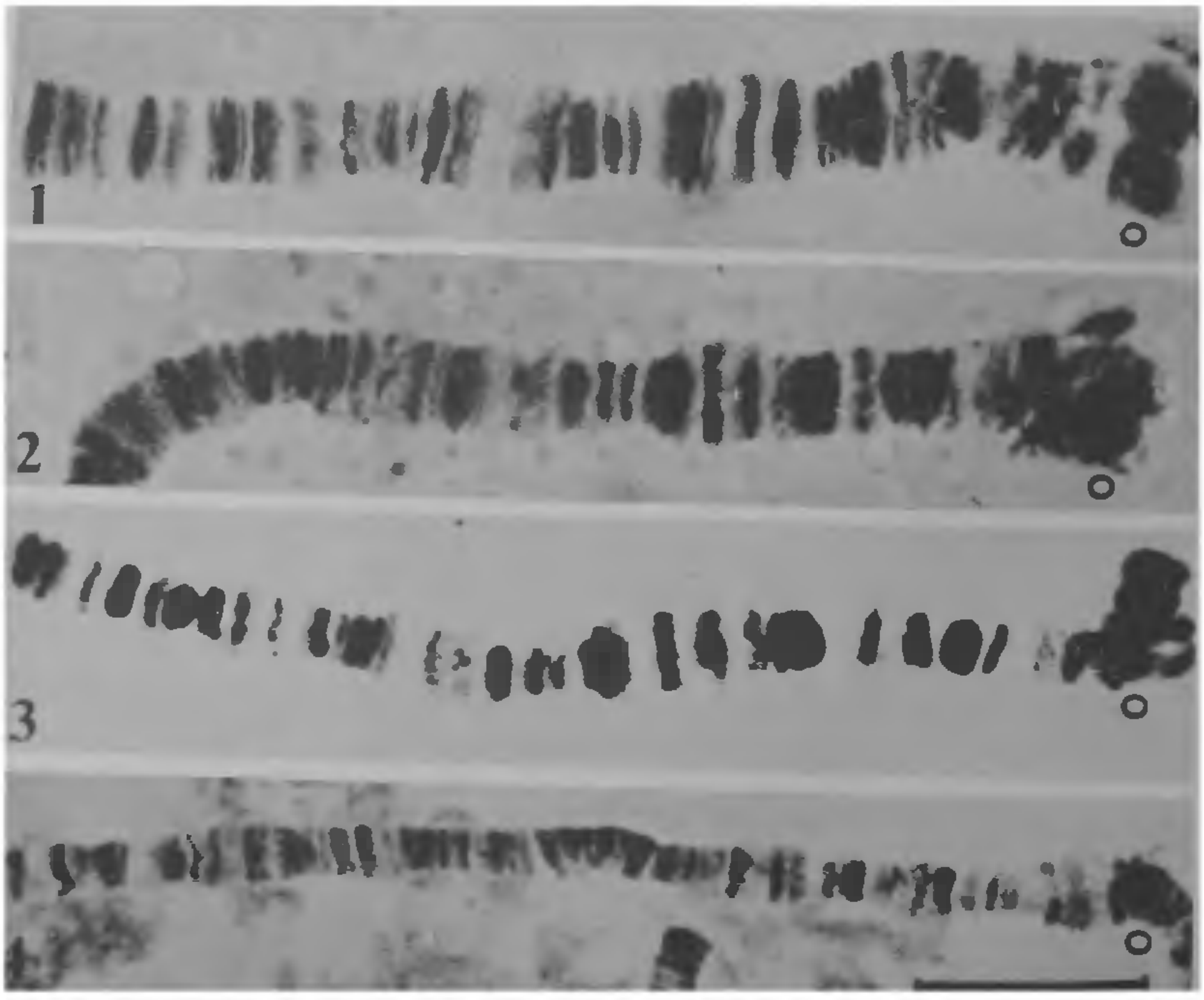
POLYTENE chromosomes (PC) have been reported in many families of Diptera both in larval tissues, destined for histolysis at metamorphosis (e.g. salivary gland, midgut, rectum, fat body and muscle cells) and in larval tissues, that persist intact into the imago (e.g. Malpighian tubules and brain)[1]. Further, it has been realized that the polytene chromosomes, though they occur in several larval tissues, they attain their largest size in salivary gland (SG) cells in most of the dipterans. Because of their large size and ease of preparation the SG chromosomes have been the major objects of several cytogenetical studies. However, due to the presence of less polytenized nuclei in larval tissues other than SG, the PC are thin, sticky and difficult to prepare and reproduce. As a result, very little is known about comparative accounts of PC of different tissues.

Since long, several systems (such as *Drosophila, Chironomus, Rhynchosciara*, mosquito etc) have been tried and studied[2–4] to some extent but the information gained so far is fragmentary and inconsistent.

Recently, we have come across *Melanagromyza obtusa*, a dipteran species of the family Agromyzidae. *M. obtusa* is a serious pest on an important pulse crop (*Cajanus cajan*. Pigeonpea), in the Oriental region, particularly in India, Java and Malaya, and causes substantial damage to both pods and grains[5]. While studying its genetic constitution[6–8] it was



Figures 1–4. Photomicrographs of a section of polytene chromosomes from **1.** Salivary gland; **2.** Midgut; **3.** Malpighian tubule cells of *Melanagromyza obtusa*; **4.** Salivary gland of *Drosophila malerkotliana* (all at the same magnification). Circles at the right represent the centromeric positions of the Chromosomes. Bar represents 10 μ.

noticed that in addition to SG some other larval tissues such as midgut (MG) and malpighian tubules (MT) also possess adequately large and well-reproducible PC.

The mitotic karyotype of this species comprises five pairs of rod-shaped chromosomes (Acrocentric) and one pair of dot-like chromosomes. The *X* and *Y* chromosomes represent one of the five pairs of rods, the *Y* being heterochromatic and deeply stained[6].

The polytene nuclei consist of five long euchromatic arms and a very short strand. Similar to Chironomid and other Agromyzid species, *M. obtusa* also do not possess a clear common chromocentre. In the absence of a common chromocentre all chromosome elements lie freely within the nucleus[6].

The most striking feature noticed in this species is the occurrence of considerably large PC not only in SG but also in MG and MT. The MG and MT chromosomes are as good as the SG chromosomes of *Drosophila* (figures 1–4). In addition, chromosomes are compact and moderate-sized and possess distinct morphology for quick identification. The tissues (SG, MG, and MT) possess a large number of polytene nuclei and are comparatively bigger in size facilitating easy dissection and handling.

With these unique properties, *M. obtusa* is found to be a suitable material for a detailed comparative study of band-interband and puffing patterns in different tissues as well as at different stages of development. Further, it would be good material for the study of gene response against different experimental treatment in tissues having different physiological requirements.

8 June 1987; Revised 29 July 1987

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OCCURRENCE OF A BUD BLIGHT DISEASE OF MULBERRY CAUSED BY *FUSARIUM LATERITIUM* F. SP. *MORI* TYPE-A IN INDIA—A NEW REPORT

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THE bud blight caused by *Fusarium lateritium* Nees f. sp. *mori* (Desmazieres) Matuo et Sato Type-A is a serious disease of mulberry in Japan and other temperate regions[1]. The pathogen affects the buds, causing them to wither and die, resulting in heavy crop and capital loss. During our survey for new diseases and pests of mulberry (*Morus alba* L.) from different geographical regions, we noticed a severe bud blight disease at Ootacamund in the Nilgiris District of Tamil Nadu. Literature survey revealed no report from India of this disease. Considering the severity of the problem a preliminary study on the nature and cause of the disease was undertaken and the results are reported in the present communication.

The disease was noticed during February and March 1987 in varying degrees of intensity on both exotic and indigenous varieties of mulberry viz. Selection-54, Mildew resistant-I, Mysore-5, Dehradun, Mildew resistant-II, Japan-I, Japan-II, Sukasakava and Kosen (table 1), killing more than 50% of their buds. A close examination of the infected plants revealed that the nodal regions surrounding the buds were discoloured and necrotized (figure 1). The necrotic region extended both horizontally and

Table 1 *Intensity of bud blight disease caused by F. lateritium f. sp. mori Type-A on different mulberry varieties*

Variety	Per cent plants infected
Indigenous	
Selection-54 (S54)	100
Mildew resistant-I (MR I)	87
Mysore-5 (M5)	76
Dehradun (DD)	29
Mildew resistant-II (MR II)	6
Exotic	
Japan-I	93
Japan-II	77
Sukasakava	40
Kosen	30