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A NOTE ON *HELICOVERPA ARMIGERA* (HUBNER) HARDWICK, A NEW GENERIC COMBINATION OF GRAM POD BORER *HELIOTHIS ARMIGERA* Hb.

For many years, the gram pod borer or tomato fruit borer, a major pest of *rabi* pulses and cotton throughout Indian continent has been referred to as *Heliothis armigera* Hubner.

Similarly in Europe and Western Countries, the corn earworms (*Heliothis zea*) and the bollworms of cotton were also considered to constitute only one cosmopolitan species, being referred to as either *Heliothis obsoleta* or *Heliothis armigera*. Recent investigations by the taxonomist of *Heliothis* fauna, however, suggested the presence of complex of the species and questioned the validity of generic name of *Heliothis* (Hardwick, 1965).

Morphologically, it is a homogeneous, group but differs sufficiently in the genetalic structures. Hardwick (1965[1] and 1970[2]) redefined the genus *Heliothis* and described a new genus *Helicoverpa*. The species of *Helicoverpa* were separated from *Heliothis dipsacea* (Linn.), type species of *Heliothis*, on the basis of the structure of both male and female genitalia and the presence of the specialised scales on the underside of the fore femur of the male, the scales being absent in the genus *Heliothis*. Structurally the genus *Helicoverpa* is readily distinguished from *Heliothis* by the possession of a multi-coiled vesica in the male and an alternately dilated and constricted appendix bursae in the female.

To determine the species complex of gram pod borer and confirm its generic nomenclature, the specimens of moths, representing a large collection made during 3 years, were sent to Dr. Hardwick, for identification. The consignment consisted of 11 specimens each differing in the colour pattern of fore and hind wings, in size and other minor details. Ten out of the eleven specimen were identified as *Helicoverpa armigera* (Hubner) and one as *Heliothis peltigera* Schiff. *Helicoverpa armigera* represented over 99% of the collection so far referred to as *Heliothis armigera* and thus observed to be the most predominent species prevalent in this part of the country.

The author is grateful to Dr. David F. Hardwick, Director, Biosystematics Research Institute, Canada, Department of Agriculture, Ottawa, Canada, for identifying the species.

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PHOTOPERIODIC CONTROL OF FLOWERING IN GROUNDNUT (*ARACHIS HYPOGEA* L.)

GROUNDNUT varieties have a high tolerance to photoperiodic changes since they can be grown throughout the year in this country where temperature conditions remain favourable. The crop requires higher air and soil temperatures for better vegetative and reproductive growth[1]. Precise studies regarding photoperiodic sensitivity for this crop are not made so far, although it has been reported that flowering of this crop is not influenced by photoperiod[2–4]. Some reports suggest that in groundnut flower initials already exist within the seeds even before germination and hence it does not require photoinduction[5]. It is also shown that the plant is sensitive only during the first six days after germination[6]. Hence, there is a need to examine the photosensitivity of groundnut more precisely.

The groundnut seeds of eight varieties, commonly grown in this country, *viz.*, TMV-1, TMV-2, TMV-10, J-11, Pol-1, C-148, M-145 and M-13 were sown in small plots and exposed to 6, 8, 10, 14 and 24 hrs of photoperiods from the 10th day of germination. For short day treatments (6 to 10 hrs light) plants were covered with black cloth on a special structure. For continuous light treatment (24 hrs light) 100 watt incandescent lamps were used during the night. Normal day plants (14 hrs light) were grown under natural light conditions. The appearance of first flower and 50% flowering were noted.

Changes in day length caused considerable effect on the flowering in most of the varieties. An increase in day length from 6 to 10 hrs hastened the flowering (5 to 7 days) in TMV-1, TMV-2, TMV-10, J-11 and M-13. Day length beyond 10 hrs delayed the flowering significantly. Two varieties Pol-1 and C-148 were found to be relatively less sensitive to the changes in photoperiod.

These results suggest that all the eight varieties flowered under a wide range of photoperiod (6 to 24 hrs) but flowering time was influenced by the changes in the length of photoperiod. Ten hours of light with 14 hours of associated darkness was optimum for

has cnung the flowering time. Shorter or longer photoperiod tended to delay the flowering. These experiments clearly show that groundnut varieties are photosensitive; hence earlier suggestions that the plant could be classed as day neutral[2–4] is not substantiated. It is interesting to note that photoperiods shorter or longer than 10 hrs delayed the flowering in most of the groundnut varieties used in this experiment.

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SPONTANEOUS CEREBRAL NOSEMIASIS IN A LABORATORY MOUSE

Encephalitozoon cuniculi, the cause of spontaneous paralysis in rabbits, has been found to affect a large number of laboratory and domesticated animals (rat, mouse, rabbit, guinea pig, hamaster, ferret, cat, dog, ox and goat), avian species (pigeon, parrot and sparrow) and man (Perrin[1], Lainson *et al.*[2], Jirovec[3], Petri[4], and Pattison *et al.*[5]). The organism was renamed as *Nosema cuniculi* by Lainson *et al.*,[2] 1964. Ray and Raghavachari[6] and Khanna and Iyer[7] described this parasite from the kidneys of rabbit and goat respectively from this country. The purpose of this note is to place on record the occurrence of *Nosema cuniculi*, in the brain of a white mouse for the first time from this country.

On histopathological examination of formalin fixed tissues collected from a mouse which had died of botrycmycosis affecting various interval organs, the cerebral white matter showed focal scattered areas of necrosis, infiltrated by glial cells with hyperaemic changes in the neighbouring vascular channels. Gram stained sections revealed small, rounded pseudocysts containing numerous small Gram-positive cigar–shaped parasites with rounded ends approximately $0{\cdot}1–1 \times 1{\cdot}5–2{\cdot}5\,\mu$ in size (Fig. 1). The parasites had a clearly defined nucleus with a dark staining central band and rounded pale area at the poles. They stained weakly with Giemsa but intensely by Goodpasture-Perrin technique. On the basis of morphology and staining affinity, the parasite was identified as *Nosema cuniculi* which was also confirmed by Dr. P. C. C. Garnham, F.R.S., London School of Tropical Hygiene and Medicine, U.K., during his recent visit to this Institute.

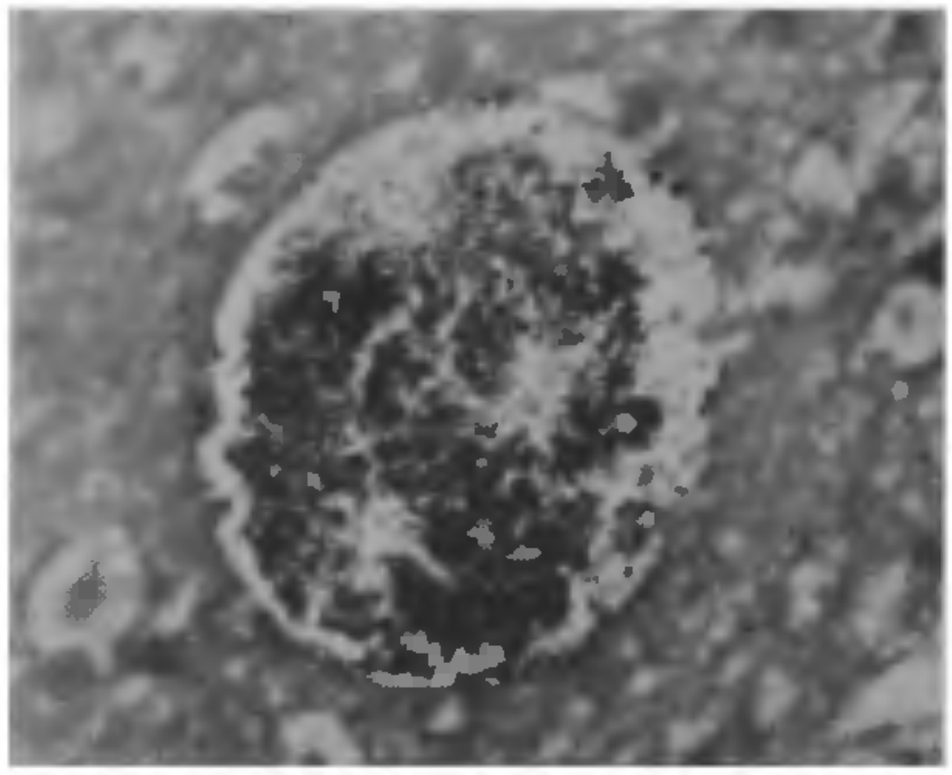

FIG. 1. Brain showing parasitic-cyst of *Nosema cuniculi*. Gram, × 1,000.

The parasites Nosema and Toxoplasma are very similar and differentiation between them is based on immunological and morphological characteristics (Soulsby[8]). Morphologically Toxoplasma is larger in size, crescent–shaped and is Gram-negative. Cytoplasm is granulated with Giemsa stain and the organism stains well with haematoxylin and eosin.

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WHITE: A NEW COLOUR LOCUS IN *KERRIA LACCA* (KERR)

Introduction

THE white lac insect was first picked up in a F_4 progeny from a cross of two distinct races of the common Indian lac insect, *Kerria lacca* (Kerr)[1]. The discovery was considered significant because of the industrial demand for a colour-free lac resin. Later, however,