RECORD OF AZIMUTHAL EFFECT ON COTTON BOLLWORMS

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OBSERVATIONS on boll formation and damage by bollworms on locules were recorded. The data showed that the percentage boll formation was more in western and northern directions, being 30 and 32%, respectively, than the other two directions. The former showed azimuthal effect while the latter had magnetic azimuth.

Locules damaged by bollworms showed positive azimuthal effect, infestation on an average being 40% facing east direction followed by 23·2% in western direction. North and south directions had low and equal distribution.

This finding has practical implication of spraying the field from east to west direction and *vice versa*. It will give better coverage. Hence higher control than at random spray.

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NEW RECORDS OF PREDACEOUS BEETLES ON BROWN PLANTHOPPER IN INDIA

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BROWN planthopper, *Nilaparvata lugens* (Stal), a potentially destructive rice pest, has a large natural enemy complex suppressing its population. Manjunath *et al.*[2] reported four species of Coccinellids namely, *Coccinella arcuata* (F.), *C. repanda* Thunb., *Menochilus sexmaculata* (F.), *Verania discolor* preying on this bug from Karnataka. *Paederus fuscipes* Curtis (Staphylinidae, Coleoptera) was found to be a potential predator of this pest in Malaysia (Peter *et al.*[3]), Japan, Taiwan and Thailand (Chiu[1]).

During April 1979, two species of Coccinellids, namely *Coccinella billieti* (Mulsant) and *Oenopia* sp. and two species of *Staphylinids*, namely, *Paederus fuscipes* and *P. melampus* Er., were found feeding on nymphs of *N. lugens* in the field. Both coccinellids and *P. melampus* are new predators to be recorded for this pest and *P. fuscipes* is the first record of the predator of the pest from India.

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1. Chiu, S. S. C., *Brown Planthopper : Threat to Rice Production in Asia*, IRRI, Los Banos, 1979, p. 375.
2. Manjunath, T. M., Rai, P. S. and Gowda, G., *PANS*, 1978, **24**, 265–69.
3. Peter, A. C. O., Lim, G. S. and Koh, A. K., *IRRN*, 1978, **3**, 1.

EFFECT OF EXPOSURE OF RATS TO LOW TEMPERATURE ON SODIUM AND POTASSIUM HOMEOSTASIS IN BLOOD

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BIOCHEMICAL changes induced by hypoxia have already been studied in detail in this laboratory[1–3]. In a previous communication[3], we have already reported that acute hypoxia significantly changes red cell membrane permeability as revealed by influx of Rubidium 86 and Sodium 22. Hypoxia lowers body temperature[1–4], of laboratory rats and since at high terrestrial elevation low ambient temperature along with low atmospheric pressure are prevalent, it was proposed to study the effect of low ambient temperature alone on red cell membrane permeability and associated changes in blood.

Materials and Methods

Adult male Sprague-Dawley rats, 6 months old, were kept at 5°C for 5 and 24 hours respectively. Sodium[5] and potassium[6] of plasma and red cells were measured colorimetrically. Influx and efflux of sodium and potassium in erythrocytes were studied *in vitro* using Sodium 22 and Rubidium 86[7]. Blood 2,3 Diphosphoglycerate (DPG)[8] and Reduced Glutathione (GSH)[9] contents were estimated by colorimetric methods.

Results and Discussion

Maintenance of rats at 5°C for 5 and 24 hours resulted in a lowering of body temperature by 6·6°C and 1·2°C respectively[1,4]. Results in Table I reveal that exposure to cold for 5 hours at 5°C has no effect on influx and efflux of Rubidium 86 and Sodium 22 in red cells *in vitro* in rats. Similarly, concentrations of sodium and potassium of plasma and red cells in rats with short-term cold exposure were same as