suggested that the diel rhythmicity observed in the phosphatases activity might be due to the corresponding variations observed in the physiology of the slug during different periods of the day[9]. The rise and fall observed in the activity of phosphatases between any two consecutive periods of the day are statistically significant.

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ON THE TRENDS OF INFESTATION OF TWO SPECIES OF *BALIOTHRIPS* UZEL ON PADDY, MAIZE AND THEIR WEED HOSTS

THE role of weeds in relation to the intensity of infestation in crop plants is well known and the observations presented herein relate to *Baliothrips biformis* (Bagnall), a serious pest of rice seedlings in all rice growing areas of the world, particularly in the nursery stage upto 2 to 3 weeks after transplantation, as well as *Baliothrips holorphnus* (Karny)* on young growing maize. In view of the high rate of multiplication, and comparatively short duration of life cycle o *Baliothrips biformis*, with an average of two weeks, severe infestation causes serious damage resulting in the longitudinal curling of leaves which subsequently dry up (Ananthakrishnan, 1971[1], 1973[2]; Grist and Lever, 1969[3]). Information on the population trends of this species prior to transplantation of rice seedlings, as well as that in the weed host of the species, appear to be important criteria in assessing the role of weeds in *Baliothrips biformis* infestations and consequent deweeding to prevent heavy build up of thrips population in the nursery stage. Regular examination of IR 20 seedlings in the nursery stage upto the transplantation period, indicated the beginning of infestation from eighth to tenth day after germination, followed by the build up of populations and then a gradual decline till the twenty-fifth to the twenty-eighth day, when transplantation commenced in the fields under investigation. Two weed species—*Echinochloa colona* and *Cyperus iria*—were abundant, with an estimated density of 221·4/sq. m. and 133·9/sq. m. respectively, along with a sparse distribution of *Cyperus rotunda* all along the bunds, and, the density of paddy seedlings being of the order of 671·8/sq. m.

Analysing the trends of infestation of seedlings, a gradual build up of population was evident, the total population inclusive of adult males, females and immature stages showing the maximum peak during eighteenth to twentieth day and gradually declining thereafter till the time of transplantation. Figure 1 represents the comparative trends of infestation of the adult

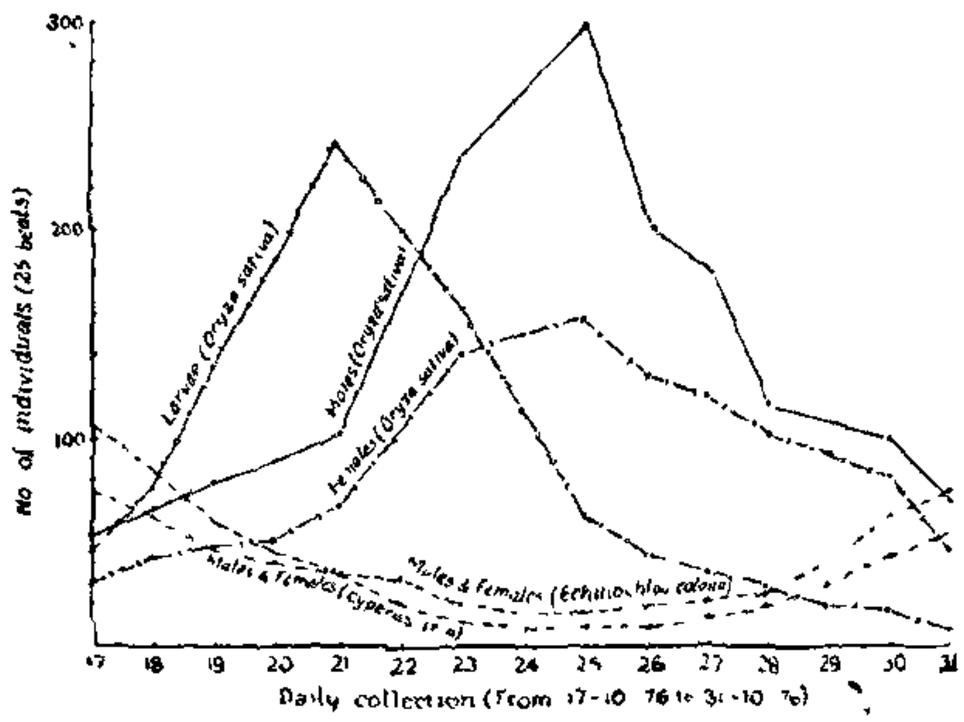

FIG. 1. Trends of infestation of *Baliothrips biformis* on the paddy plant *Oryza sativa* and the weeds *Echinochloa colona* and *Cyperus iria*.

males, females and immature stages with the peak of immature and adult infestation on the sixteenth and seventeenth days and nineteenth and twentieth days respectively after germination, as was observed in the fields under observation. The adults, more particularly the males, were more abundant than the females with the sex ratio of 3:2. The picture of *Baliothrips biformis* in the weeds (while the build up is heavy in the paddy plant) is comparatively low, nevertheless

indicating a gradual build up during the period of their decline in the rice seedlings.

Baliothrips holorphnus (Karny) very closely allied to *Baliothrips biformis*, is another potential pest species, (sporadically noted in paddy, but more abundant in the growing seedlings of maize). Evidence of a distinct correlation between the degree of infestation of this species in young growing maize as well as in the abundant weeds, *Borreria hispida* and *Echinochloa colona*, is indicated in Fig. 2.

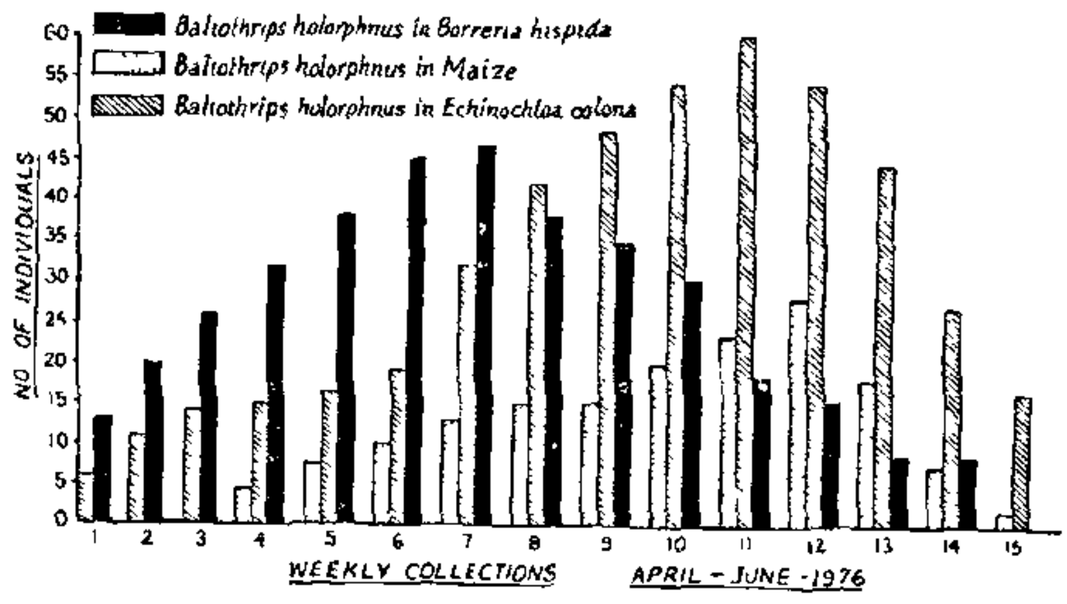

FIG. 2. Trends of infestation of *Baliothrips holorphnus* in maize, *Borreria hispida* and *Echinochloa colona*.

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* Zur Strassen describes this as a new species *Chloethrips blandus* retaining the generic name *Chloethrips* Priesner.

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EFFECT OF pH ON THE CELLULAR LOCALIZATION OF Δ^5 3β-HYDROXYSTEROID DEHYDROGENASE IN THE TESTIS OF THE SKINK, *MABUYA CARINATA* (SCHN.)

WATTENBERG (1958)[1] was the first to demonstrate the enzyme Δ^5 3β-Hydroxysteroid dehydrogenase (Δ^5 3β-HSDH) histochemically in steroidogenic tissues. Since then, this technique has been widely used as an important tool in the detection of cellular sites of steroidogenesis. The technique involves incubating frozen tissue sections in a buffered medium containing suitable hydroxysteroid substrate, appropriate co-factor and a tetrazolium salt as the final hydrogen acceptor. In the course of our investigations, on the testis of the skink, *Mabuya carinata* (Schn.), we found that the enzyme could be localized in the seminiferous tubules but not in the interstitial cells[2] at pH 7·5 according to the procedure of Baillie *et al.*[3]. But the Leydig cells in the testis of the garden lizard, *Calotes versicolor*[4] and the monitor, *Varanus monitor*[5] gave satisfactory results with the same procedure. This prompted us to undertake a detailed investigation into the kinetics of the localization of Δ^5 3β-HSDH selectively in the interstitial cells of Leydig taking ino account (i) the pH of the buffer, (ii) the steroid substrate concentration, (iii) the co-factor concentration, and (iv) the concentration of the tetrazolium salt.

Testes from the sexually mature skinks during the breeding season were frozen and sections were cut at 16 μ in a cryostat maintained at – 20° C. The sections were thawed for a moment and incubated (with or without prior acetone treatment to fix the enzyme and to remove free lipids) for 1 hr at 37° C. The incubating media consisted of the steroid substrate, Dehydroepiandrosterone or Pregnenolone (0·25 mg to 2·5 mg/ml), β-NAD (0·5 mg to 3 mg/ml) and nitroblue tetrazolium (0·25 mg to 1·5 mg/ml) in 0·1 M Tris buffer at various pHs from 6·5 to 8·5. Controls were incubated omitting the substrate or treating the section in boiling water. After incubation, the sections were fixed in 10% neutral formalin and mounted in glycerine jelly or PVP medium. The enzyme activity was visually quantitated based on the amount of formazan deposition.

The concentration of the co-factor and of the tratrazolium salt were not so critical within the ranges we have used so far as the site of enzyme localisation is concerned. But pH had a profound influence on the activity of the enzyme and on the cellular site of its localization. At precisely pH 8·0, the enzyme showed highest activity and could be selectively localized in the Leydig cells (Fig. 1), whereas at pH 7·5 formazan deposition could be clearly seen mainly in the seminiferous tubules (Fig. 2), and no formazan deposition could be observed at other pH values used. The following alteration of Baillie *et al.*'s incubating medium gave best results for this tissue; the steroid substrate (0·4 mg/ml), β-NAD (1·5 mg/ml), NBT (0·5 mg/ml) in 0·1 M Tris HCl buffer (pH 8·0).

Biosynthetic pathway of almost all the hormonally active steroids involves the conversion of Δ^5 3β-hydroxysteroids into their ketoforms and the enzyme system carrying out this reaction has been called Δ^5 3β-hydroxysteroid dehydrogenase which preferentially utilises NAD as the coenzyme[6,7]. In the histochemical reaction, if this enzyme is present in the tissue, it oxidises the steroid substrate and the hydrogen is finally accepted by tetrazolium salt which gets reduced to the coloured, insoluble formazan formed at the site of reaction in the tissue section. $NADH_2$-tetrazolium reductase or