

# Soil and crop management

## Timing of fertilizer application for rice in Ubon Ratchathani, Thailand

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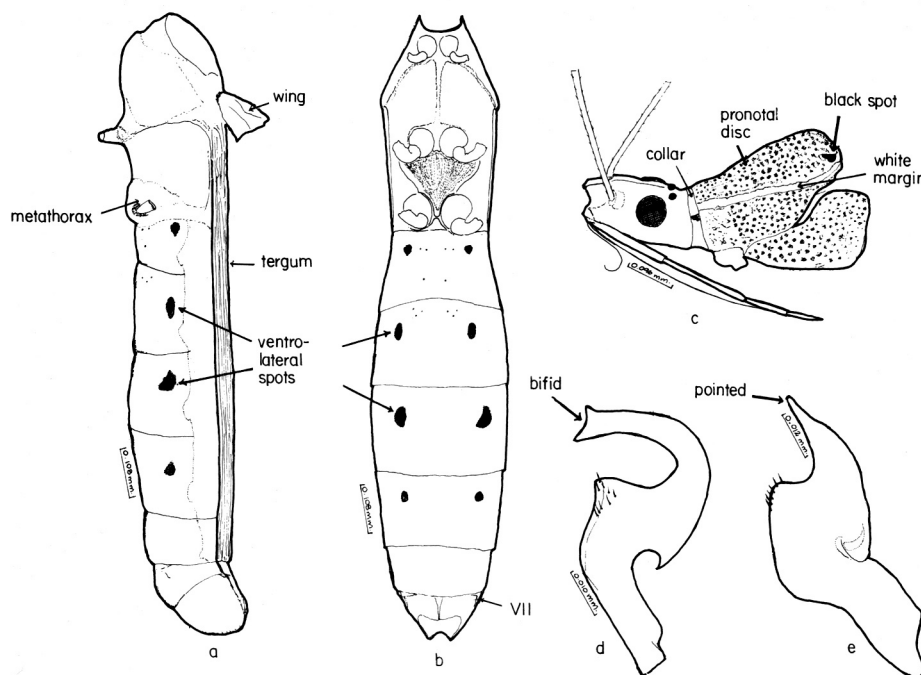
A basal incorporation of fertilizers before transplanting is sometimes risky and impractical in rainfed areas. On sandy soils, deep placement may not be effective because of leaching and other causes. Applying fertilizers after transplanting, when the rice plant is well established, may reduce losses.

Initial fertilizer applications at different times after transplanting were compared in a randomized complete block and replicated 4 times at Ubon Ratchathani RES (Ubon loamy sand, pH 4.8, organic matter 0.5%, cation exchange capacity 1.6 meq/ 100 g soil) in the 1979 wet season. A first dose of 125 kg ammonium phosphate (16-20-0)/ha and 31.25 kg potassium chloride (60% K<sub>2</sub>O)/ha was applied with 62.5 kg ammonium sulfate (21% N)/ha at panicle initiation for the fertilizer treatments. The incorporation treatment gave high grain yields (see table). The topdressing treatments gave grain yields comparable to those with basal incorporation. ■

### Effects of time of fertilizer application on yield of Niaw Sanpahtawng rice (av of 4 replications). Ubon Ratchathani RES, 1979 wet season.

Time of fertilizer application <sup>a</sup>	Yield (t/ha) <sup>b</sup>
No fertilizer	1.7 c
Incorporated BT	2.4 ab
Topdressed just AT	2.4 ab
Topdressed 7 DT	2.4 ab
Topdressed 14 DT	2.2 b
Topdressed 21 DT	2.2 b
Topdressed 28 DT	2.4 ab
Topdressed 35 DT	2.5 a
CV	8.2%

<sup>a</sup>BT = before transplanting, AT = after transplanting, DT = days after transplanting. <sup>b</sup>Any 2 means followed by the same letter are not significantly different.



*Leptocoris oratorius* (Fabricius) showing the ventro-lateral spots in both sexes, male (a), female (b); *L. acuta* (Thunberg) showing the black spot on the posterior angle of pronotal disc and white line along margins (c); male right claspers of *L. acuta* (d); and *L. oratorius* (e).

### A note on the parasite *Haplogonatopus* sp. of brown planthopper nymphs

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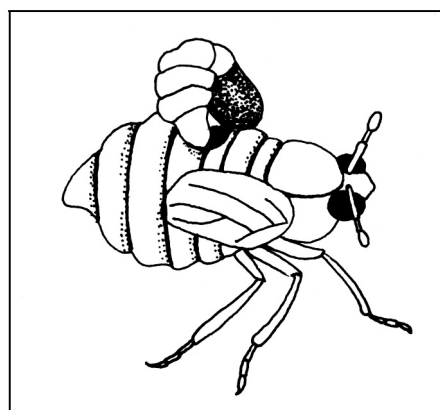
While searching for natural enemies of the brown planthopper (BPH), we found *Haplogonatopus* sp. (Hymenoptera: Dryinidae) parasitizing BPH nymphs for the first time in Andhra Pradesh in September 1977 at the Rice Research Unit, Bapatla, India.

The sac of the parasitic larva appears as a minute, characteristic arch or "C" form on the second abdominal segment of the BPH nymph (see figure).

Parasitized nymphs are less active.

BPH parasitization by

*Haplogonatopus* sp. ranged from 1 to 5% (see table). Because these values are low, *Haplogonatopus* sp. cannot be considered an effective natural enemy of BPH unlike the mirid bug *Cyrtorhinus lividipennis* and wolf spider *Pardosa annandalei* (Gravely). However, it can supplement the other parasites' activity. ■



*Haplogonatopus* sp. larva on BPH nymph.

### Parasitism of *Haplogonatopus* sp. larva on BPH nymphs in September 1977. The larvae were collected at weekly intervals from the variety Vasista. Andhra Pradesh, India.

Wk <sup>a</sup>	Para-sitized BPH nymphs (no.)	Unpara-sitized nymphs (no.)	Para-sitism (%)
1	3	97	3
2	5	95	5
3	1	99	1
4	5	95	5

<sup>a</sup>Each observation involved 100 BPH nymphs.