Managing other pests

Nitrogen fertilization and *Meloidogyne incognita* incidence in rice

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We examined the influence of different rates of sulfate of ammonia on *M. incognita* in a greenhouse experiment. Faro II (OS6) seeds were grown in autoclaved sandy loam soil in microplots (1.5 × 1 × 1 m). Each block was inoculated with 600 eggs and second-stage juveniles of M. incognita obtained from galled roots of *Celosia* sp.

Sulfate of ammonia treatments at 30 and 45 kg N/ha, and an unfertilized control were in a completely randomized block design with 3 replications. Data on emergence, seedling vigor, and plant height were taken. Roots were examined for galls and processed for nematode recovery.

Plant performance in the fertilized plots was better (see table). Galling was less in plants that received 45 kg N/ha, and the galls obtained were much smaller. Nematode recovery from infected roots was highest in plants without fertilizer. Although plants were much taller at reduced N, seedling vigor was less. □

Effect of ammonium sulfate fertilizer on *M. incognita* in rice. Badeggi, Nigeria.

Treatment	Plant height (cm)	Seedling vigor[a]	Galling index[b]	Nematode recovery (no.)
No N	53.5	4	2.5	23.50
30 kg N/ha	48.0	3	0.5	16.10
45 kg N/ha	42.3	1.5	–	7.20
LSD (5%)	4.7	1.71		15.03

[a]*Standard evaluation system for rice.* [b]0 = no galls, 5 = maximum galling.

Water management

Economizing irrigation through rice fallow cropping strategies

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Water needs of alternative crops (peanut, sunflower, and green gram) were evaluated in irrigated rice fallows of coastal Maharashtra in 1986. The area receives essentially monsoon rainfall (2,500-3,500 mm) Jun-Sep, with a characteristic rain-free period Oct-May.

Soil of the experimental plot was medium black, with 0.63% organic C, 12.68 kg P, and 157.7 kg K/ha. Peanut, sunflower, and green gram were sown the first week of Jan; rice was sown in mid-Dec and transplanted in late Jan. Recommended fertilizer, plant density, plant protection, and irrigation were adopted. Water used by different crops was recorded throughout growth. Water use efficiency (WUE) was based on yield and water utilized.

The rice crop needed 1,185 mm of water for a yield of 4.1 t/ha (see table). Peanut, sunflower, and green gram required 612-775 mm less water than rice, a 53-65% water economy with WUE almost identical (2.92-3.49 kg/ha per mm) to that of rice. The gross return from 1 mm of irrigation was about 2.4 times greater with alternative crops. □

Water use by rice, peanut, sunflower, and green gram on the irrigated rice fallows. Ratnagiri, Maharashtra, India, 1986.

Crop	Yie1d (t/ha)	Gross returns[a] ($/ha)	Water applied (mm)	Gross returns ($/mm irrigation)	Water use efficiency (kg/ha per mm)	Economy in irrigation water (mm)
Rice	4.1	788	1185	0.66	3.46	–
Peanut	2.0	923	572	1.60	3.49	612 (53)
Sunflower	1.5	692	430	1.60	3.49	755 (64)
Green gram	1.2	646	410	1.58	2.92	775 (65)

[a]From grain or pod.

Farming systems

Effect of tillage on stem borer (SB) larvae carry-over in a rice - wheat rotation

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Little time is left after rice harvest to prepare land for sowing wheat. Farmers cultivate twice, broadcast wheat seed, and cover it with a tractor-drawn wooden plank. Zero tillage or direct drilling is being introduced to reduce production costs.