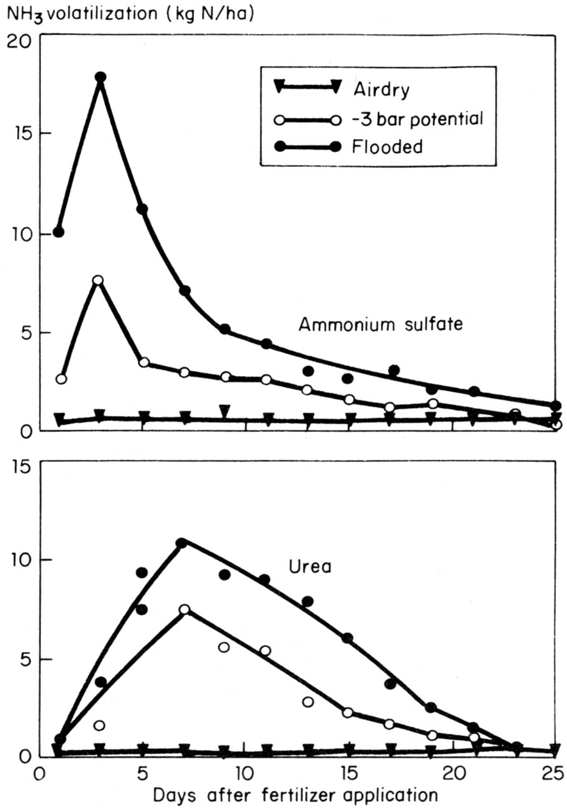
soil with ECe 7.4 mmho/cm at 3 soil moisture levels: airdried, -3 bar soil water potential (20% moisture), and waterlogged. Both experiments were in three replications. Except in the first 24 h, volatilization rate was measured at 48-h intervals. Soil and floodwater pH (1:2) were 7.5 and 8.2 before fertilizer application.

Except with UB and UPP, volatilization nearly doubled at 7.5 mmho/cm (Fig. 1). Figure 2 shows that the loss from both PU and AS increased with increasing soil moisture. Volatilization was greatest during the first 3-7 d, and then gradually declined.

Results showed that N use efficiency could be improved by reducing volatilization in salt-affected lowland rice fields by applying PU instead of AS, and by placing PU 5 cm deep in soil as UPP or UB. For upland fields, fertilizer application should be timed so that soil moisture is low during and immediately following N application.



2. Volatilization loss of NH3 at 3 soil moisture levels, West Bengal, India.

Response of rainfed rice to post-planting soil-management practices

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We studied the response of rainfed rice (VRS16) to 4 postemergence management practices: minimum tillage, interrow compaction at Proctor moisture content to achieve bulk densities of 1.6 and 1.8 g/cm^3, embedding polythene strips in the interrow space, and conventional practices. Soil was a loamy sand with 0.44% organic C, bulk density of 1.36 g/cm^3, and saturated hydraulic conductivity of 45 mm/h. Rice was sown in rows spaced at 23 cm on 6 Jul 1984. It received a basal application of 20-18-33 kg NPK/ha and topdressing of 20 kg N/ha 45 d after sowing. Treatments were imposed after complete crop emergence.

All soil modifications significantly increased grain yield as compared to the conventional practices (see table). Grain yield was highest when the interrow soil was compacted to a bulk density of 1.6 g/cm^3. Embedding polythene strips between the rows also was promising. Compacting the soil to a bulk density greater than 1.6 g/cm^3 reduced grain yield, possibly by restricting root proliferation. Straw yield did not differ significantly among treatments.

Rice grain and straw yield with different soil management practices, Almora, India.

Treatment	Yield (t/ha)	
	Grain	Straw
Minimum tillage	1.9	4.7
Compaction at Proctor moisture content to bulk density of 1.6 g/cm^3	2.0	5.1
Compaction at Proctor moisture content to bulk density of 1.8 g/cm^3	1.7	4.7
Embedding polythene strips in the interrow space	1.9	5.0
Conventional practices	1.4	4.1
CD at 5%	0.3	ns

Influence of N level and source on rice yield

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We evaluated prilled urea (PU), urea supergranules (USG), and 1% PPD urea (PPDU) in a field experiment with Co 43 at TNAU. N levels were 0, 37.5, 75.0, and 112.5 kg/ha. P, K, and Zn were applied basally at 17.6, 33.2, and 2.3 kg/ha. USG was applied at 8-10 cm depth and PU and PPDU were applied in 3 splits. Soil was a clay (Typic Haplustalf) with pH 8.4, E.C. 0.2 mmho/cm, 107-9.8-263 ppm available NPK, 588 ppm total soil N, and 0.78% organic C.

Grain yield and crop performance were generally best with USC (see table). Plants recovered more N from USG, followed by PPDU and PU. N recovery ratio was higher at lower application rates. Postharvest soil analysis indicated that total N content did not change significantly, although USG plots had a maximum 729 ppm total N.