

Reducing impacts of salinity on crops growing in tsunami-affected areas in Nanggore Aceh Darussalam Province, Indonesia

The 26 December 2004 tsunami in the Indian Ocean inundated large areas of low lying agricultural land along the coastal lines of Nanggore Aceh Darussalam province, Indonesia. Crops grown on land that has become saline since the tsunami may fail unless they are managed to avoid the adverse effects of soil and water salinity. Indonesian and Australian scientists working in this area are currently assessing salinity in tsunami-affected land using the electromagnetic induction technology (Fig. 1), effect of tsunami-induced salinity on crop performance, and conducting rehabilitation trials to manage salinity risks.



Fig. 1. The electromagnetic induction instrument (EM38) is used to assess salinity level in the tsunami-affected areas of NAD province, Indonesia.

This information sheet outlines a range of management practices that can reduce yield losses.

In areas with medium or high salinity risk, grow rice as a reclamation crop then grow more salt-sensitive crops such as soybeans, peanuts or vegetables.



Fig. 2A. Irrigated rice showing good growth after the tsunami, Meurah Dua, Pidie

Avoid growing crops in areas which have recently been inundated by tidal water.



Fig. 2B. Tidal affected soybean crop in Brembang village, Pidie

Avoid the use of plastic mulch until the 0-20 cm soil has been leached because the mulch prevents salt leaching from crop beds formed from saline surface soil.



Fig. 3. Insufficient leaching of saline soil bed reduced performance of chilli crops, Kampung Coet, Jangka Buya, Pidie.

Split fertiliser applications to avoid greater salt stress and apply quantities according to yield potential to avoid wasting fertilizer.

Use the following practices to grow rice on areas with medium or high salinity risk

- Flush nursery area with fresh water before sowing
- Flush rice bays with river water before transplanting
- Ensure there is through flow of water from all rice bays
- Try salt-tolerant varieties



Fig. 4. Poor water circulation is damaging to rice crops (left paddock), Trieng Gading, Pidie

Use the following practices to grow peanuts on areas with medium or high salinity risk

- Sow on less saline land
- Reduce moisture stress by irrigating frequently with river water in dry season
- Reduce waterlogging by sowing on high beds
- Try salt-tolerant varieties



(a) Patchy peanut crop on highly saline soil



(b) Poor establishment of peanut on waterlogged field conventional bed height of 20 cm



(c) Combination of high bed (30 cm) and good drainage system prevent waterlogging and improve crop establishment (98%)

Fig. 5. Peanut crops in Pante Raja, Pidie.

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