PROBLEMS AND PERSPECTIVE OF AGRICULTURE ON ALLUVIAL SOILS OF INDONESIA

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Alluvial soils are part of the major agricultural soils in Indonesia, especially for wet rice (sawah) and other important annual food and industrial crops. They comprise around 23% of the total land area of the country, i.e. about 45 million hectares, including the associated histosols. As significant differences occur among alluvial soils in their agricultural potential, an appropriate classification is crucial.

From the agricultural point of view as well as from that of pedology, an adequate knowledge about the source of the fluvial material, the mode of sedimentation, and the environmental condition in which sedimentation has taken place, is of almost importance. Problems that may evidently be related to those phenomena are (a) a very low bearing capacity caused by a prolonged wetness and the subsequent acquiring of a very hard consistency when dry; (b) an extremely poor drainage condition due to a hydromorphic environment, or the existence of an automorphic impeded drainage; (c) in virgin forested lands situation b may lead to development of a surface layer of raw organic matter which, if sufficiently thick, presents a real problem in land reclamation; (d) the occurrence of potential cat clay in the subsoil of certain alluvial soils; (e) the in the dry season; and (f) the development of a high to very high salinity in the soil, ground water, and surface water of several coastal areas due to sea water encroachment during the dry season, or during periods of high tides.

A very unripened soil in a completely reduced state may eventually be improved by the provision of an effective drainage and periodic deep cultivation. Liming and flushing in conjunction with deep drainage, or keeping the subsoil saturated with water by shallow drainage, may in time correct the tendency of some alluvial soils to develop cat clay upon reclamation.

Soils with an unfavourable soil physical condition and an impeded drainage are frequently found in areas heavily affected by floods during the wet season and by a serious

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water shortage in the dry season. The establishment of an adequate water control system is imperative.

Salinity is a recurring problem in low lying coastal flats that suffer from water shortage in the dry season. In the wet season the problem disappears naturally by the dilution effect of the rains. Supplying good quality irrigation water from outside sources should be sufficient to leach the salts beyond the rooting zone of crops. Since the topographical condition of such an area does not lend itself to an adequate natural drainage, or to the proper functioning of artificial gravitational drainage, pump drainage may be needed as an essential part of the scheme.

In a great deal of alluvial soils phosphorus seems to be the nutrient that has to be considered first in fertilization programmes. Another problem is a too low water holding capacity associated with a coarse soil texture without any appreciable organic matter content.