Research Note

SOIL EROSION IN SOUTHEASTERN HAITI[1]

Soil erosion, mainly attributable to indiscriminate deforestation, is a serious problem in Haiti, affecting probably about 60 to 80 of the land. It has been estimated that one-third of the land that was arable during colonial times is no longer suitable for agriculture. This is perhaps an exaggerated estimate, but our own observations in southeastern Haiti point to the imminent deterioration of the resource base if adequate measures are not enforced. The most extensive areas include soils with severe limitations that make them unsuitable for cultivation and even restrict their use for pasture and woodlands. The Macaya silty clay loam (Typic Haplorthox, clayey, mixed, isohyperthermic), with 25 to 65% slopes and the Macaya-Rock outcrop complex suffer from very severe erosion. Gully erosion can be particularly serious along footpaths. Soils affected by severe erosion include Toro silty clay (Lithic Calciustolls, clayey, mixed, isohyperthermic),rocky, 25 to 50% slopes; Toro-Deaty silty clays (Lithic and Typic Calciustolls, clayey, mixed, isohyperthermic), rocky, 25 to 50% slopes; and Titon-Cavalier silty clays (Plinthic and Typic Paleudults, clayey, mixed, isohyperthermic), rocky, 25 to 50% slopes. They are subject to severe erosion on steep and very steep areas mainly because of the shallow depth to bedrock. Erosion can hardly be controlled if these soils are cultivated; therefore, they should be reserved for woodland and pasture.

Also limited mainly by erosion is the use of Platon-Soulette silty clays (Tropeptic Eutrorthox, clayey, oxidic, isohyperthermic), rocky, 15 to 25% slopes; the Macaya silty clay loam, 3 to 25% slopes; and the Titon-Cavalier silty clays, rocky, 15 to 25% slope. Extensive conservation practices and cropping pattern changes are needed to control runoff and reduce erosion.

Very susceptible to erosion are Formond clay loam (Typic Dystropepts-fine-clayey, mixed, isohyperthermic), 5 to 12% slopes; Forteresse silty clay (Typic Eutrorthox, clayey, oxidic, isohyperthermic), 8 to 15% slopes; and Titon-Cavalier silty clays, 3 to 15% slope. In the case of Formond, erosion is easy to control in cultivated areas, but controlling runoff along footpaths is becoming a major problem. If these paths are not protected, a large storm could cause severe gully damage.

The erosiveness of the Rock outcrop-Cavalier (Typic Paleudults) Case Cou (Lithic Dystropepts) soils and the steepness of slopes make controlling erosion a major problem. Gully erosion is critical. It is not uncommon to observe active gullies, 2 to 3 m deep, 2 to 5 m wide, 30 m long. Some areas with convex slopes have suffered severe sheet erosion.

Data from Ultisols in Jamaica show soil losses of 179 t/ha per year from yam plantings on steep slopes under traditional cultivation. The losses were reduced to 42 t/ha with continuous contour mounds and a grass buffer strip.[2] In Puerto Rico, soil losses of more than 30 t/ha per year have been measured in unmulched coffee groves planted on 62% slopes. In corn, field beans, and pigeon pea plantings-losses of 74 t/ha per year were measured on a Tropeptic Haplorthox, at 40 to 50% slopes[3]. The problem of soil erosion is more acute in Haiti because of

[1]Manuscript submitted to Editorial Board November 28, 1985.

[2]Wahab, A. M., Lugo-López, M. A., Woo, B. M., Rosales, F. and Dehaney, J, 1985. Alternatives to bench terraces on the hillsides of Jamaica. I. Soil losses, J. Agric. Univ. P. R. 69 (3): 255-64

increased agricultural activities on the steeper slopes and the use of trees for charcoal production. This erosion affects the numerous small irrigation systems in that it increases runoff and the sediment load during storms, thus subjecting the systems to flooding and/or siltation[4]. It also decreases the base flow of the streams during dry periods when the irrigation water supply is most critical.

Abdul H. Wahab
U.S. AID/Haiti
Miguel A. Lugo-López
Agricultural Experiment Station
University of Puerto Rico
Gilberto Acevedo
Soil Conservation Service, USDA

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[3]Lugo-López, M. A., Abruña, F. and Pérez Escolar, R., 1981. The role of crop and industrial residues on erosion control, properties and productivity of some major soils of Puerto Rico. Agric. Exp. Stn. Bull. 266

[4]Lugo-López, M. A., M. Taylor and A. H. Wahab, 1985. Potential of some small irrigation systems in Haiti. J. Agric. Univ. P. R. 69 (3): 445-48.