

Rainfall Characteristics and Soil Tillage Timing for Rainfed Crop Production in the Northern Guinea Savanna of Nigeria

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Abstract

Soils in the Northern Guinea Savanna Zone of Nigeria are continually being degraded. Soil erosion by water and wind are major factors degrading soils of the zone. Soil erosion in the zone is prominent during the early part of the rainfed cropping season, when the soil surfaces are largely bare. In order to estimate the magnitude of soil losses, rainfall amounts were obtained, and computed for rainstorm kinetic energy, intensity, and erosion index in the Zaria area of the Northern Guinea Savanna Zone of Nigeria.

Results obtained show that the Northern Guinea Savanna Zone of Nigeria has a defined wet season spanning from May to September, and peak rainfall in August. Monthly mean rainfall amounts for the months of June to September range from 20.75 to 29.63 mm, with kinetic energy averaging between 30.52 and 36.73 Jm⁻² mm⁻¹, and rainstorm intensity ranging from 29.45 to 38.60 mm hr⁻¹. Suitable soil and land use management practices that would control wind and water erosion in cultivated lands are suggested.

Key Words: Rainfall Characteristics, Soil Tillage, Sustainable Crop Production.