Comparative Analysis of Two Soils in Ghana, Ashanti and Brong-Ahafo Regions

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We selected two areas in Ghana in order to study methods for controlling Imperata cylindrica (cogon grass) in May 1996. One area was near Mampong that is approximately 58 km northeast of Kumasi (Ashanti forest zone) and another was near Wenchi that is about 154 km northwest (transition zone of Brong-Ahafo region). Both sites are located between 7° and 8°N lat with Mampong in the south and Wenchi in the north.

Approximately 40 yr ago the site near Mampong was a broad-leafed forest with a closed canopy. Trees such as Odum (Triplichiton spp.) and Mahogany (Swietienia spp.) predominated. Timber was harvested, the regrowth was cleared, and the area was planted to corn (Zea Mays L.) and other crops 15 to 20 yr ago. About 1984 I. cylindrica invaded and cropping was abandoned. Presently there is practically a monotypic stand of this grass. Leaves were well over 1 m in height at the start of the rainy season in May 1996.

The site near Wenchi had been used for crop production research for well over 40 yr. A variety of crops were grown including corn, cassava (Manihot esculenta Crantz) and yam (Diascorea cayeneusis L.). Imperata at Wenchi was not as dense or as vigorous as at Mampong, and was interspersed with several species of broad-leafed weeds. Before clearing, the vegetation consisted of both forest and savannah tree species with grasses as Andropogon spp. and Sporobolus spp. (Asiamah et al., 1993). In a detailed reconnaissance survey published in 1959 (Coultas) the Wenchi area was classed as a Damongo-Techiman-Tanoso compound association. The Techiman series is described as having a brown sandy loam surface over a reddish-brown gravelly clay loam subsoil and is developed on Voltaian sandstones. This approximates the soil described in this study at the Wenchi site.

From the 1959 soil survey of the Wenchi area (Coultas, 1959) the 35-yr average rainfall was 135.9 cm. There are two distinct dry seasons with December, January, and February the driest (<8 cm rain during these 12 wk). August and September are less dry and receive an average of 16 cm during the 8-wk period. Mean monthly maximum temperatures are highest in February (30.3°C) and lowest in August (20.0°C). During the Harmattans (December–February), a period of dry northerly winds, the greatest extremes in temperatures occur. This also is the period during which extensive burning of the savannah occurs. This manmade burning is to aid in preparation for planting crops and also is a period of intensive hunting as animals flee the fires.

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