

# **Improving the Nutritive Value of Cocoa-Pod by Chemical Treatment.**

Osafo, Emmanuel Lartey Kwame

M.Sc Animal Science

Department of Animal Science

Obafemi Awolowo University, Ile Ife, Nigeria

1985.

## **Abstract:**

Two 'In Situ' studies were conducted to evaluate the effectiveness of cocoa-pod ash solutions (PAS) as an alkali for treating cocoa-pods. Feed intake and overall nutrient digestibility of PAS - treated cocoa-pod based diet by cheep and goats were evaluated in two separate trials. In a screening trial, 5g oven dried and untreated cocoa-pod (Upod) or cocoa-pod treated (1:1 volume/weight) with either 4 **levels** of NaOH, 2, 4, 6 and 8% or corresponding strengths of PAS, P<sub>2</sub>, P<sub>4</sub>, P<sub>6</sub> and P<sub>8</sub> were weighed into nylon bags (2\* pore diameter) and incubated for 24 hours in the rumen of two cannulated adult dwarf sheep fed a 50% cocoa-pod diet. Results showed NDF, ADF and Lignin were reduced (P<.05) by increasing PAS or NaOH treatment. Both NaOH and PAS improved (P<.05) degradability of dry matter, NDF and ADF.

The % Dry Matter Loss (EMI) were 25.9, 52.1, 54.4 and 55.2 for Upod, 8% NaOH, P<sub>6</sub> and P<sub>8</sub> respectively. A second trial to compare degradability of Upod, dewaxed cocoa-pod (DWH), 8% NaOH (N<sub>8</sub>), P<sub>6</sub> and P<sub>8</sub> treated cocoa-pod after 24 and 48 hour incubation revealed degradation of nutrients was improved by both PAS and NaOH treatment and the degradation was completed in 24 hours for alkali treated pods. A 50% cocoa-pod based diet in which cocoa- pod were either untreated (Upod) or treated with P<sub>8</sub> (Test diet 1) were fed to 12 sheep and 12 goats. In a second trial, the cocoa-pods were treated with P<sub>2</sub>, P<sub>4</sub>, P<sub>6</sub> PAS, and designated Test **2**, Test diet 3 and Test diet 4 respectively. Results showed intake of test diet 1 was reduced (P< .05). Digestibility was however improved in both sheep and goats fed Test diet 1. Feed intakes improved when lower levels of PAS treated feed were fed in second trial. Water consumption and volume of urine were significantly higher in animals fed treated diets. These results suggest cocoa-pod ash solutions could be used as a solution for treating cocoa-pods and other fibrous feeds to enhance utilization by livestock.

**Keywords:** cocoa-pod/ chemical treatment

**Supervisor:** O. B. Smith