

**EFFECT OF LOCATION UNDER DIFFERENT RAINY SEASON INTERPHASE ON UDDER
MORPHOMETRY, MILK YIELD AND COMPOSITION OF BUNAJI COWS IN SOUTHERN
GUINEA SAVANNA, NIGERIA**

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ABSTRACT

This study investigated the effect of location under different rainy season interphase on udder morphometry, milk yield and composition of Bunaji cows in Southern Guinea Savanna, Nigeria. Milk yield, composition of milk as well as physico-chemical properties of milk produced by Bunaji cows under interphase of rainy season and the udder morphometry was determined. The study was conducted in Niger state between the months of May to October 2023. Three experimental sites: Minna, Lambata and Tafa were selected. The experimental design used was Completely Randomized Design (CRD) with three treatments (Minna, Lambata and Tafa), three replicates (early, mid and late rainy season) and ten (10) animals per replicate. This gave the total of ninety (90) lactating Bunaji (White Fulani) cows as experimental animals. Milk sample collection was done in three phases namely: early, mid and late rainy seasons which were analyzed for Crude Protein (CP), Ash, Moisture, Fat, Nitrogen Free Extract (NFE), mineral composition, physico-chemical properties and Udder morphometry according to the standard procedure of Association of Official Analytical Chemist AOAC (2000). Results showed that there were significant ($P < 0.05$) differences in milk yield across all observed parameters, namely, early, mid, and late rainy seasons. Also, there was a significant ($P < 0.05$) difference in moisture composition, whereas there were no significant ($P > 0.05$) differences in crude protein, ash, fat, and NFE. In addition, phosphorus, iron and zinc did not exhibit a significant difference among the treatment groups ($P > 0.05$), while calcium displayed a noteworthy difference among the treatment groups ($P < 0.05$). None of the physiochemical parameters considered Total Solid(TS), Total Titratable Acid (TTA), viscosity, density and Total Soluble Solid (TSS) was significantly different ($P < 0.05$) among treatment groups except pH which was found to be significantly different also there was a significant difference ($P < 0.05$) in udder circumference, while no significant differences ($P > 0.05$) were observed in udder depth, udder length and udder width. The study concluded that milk yield, moisture composition, calcium composition, pH and Udder circumference of milk produced by Bunaji cows in the study areas were affected by rainy season interphase. It was therefore recommended that dairy farming programs focusing on cows from Lambata and Tafa, which consistently produced higher milk yields across all interphases, should be explored; nutritional interventions aimed at optimizing moisture levels in the diet of cows in other locations aside Tafa will go a long way in improving milk quality, calcium supplementation strategies should be adopted to address variations in calcium composition in milk and pH levels in cow milk should be constantly monitored and managed by adjusting feeding practices.

Key Word: Effect, Location, Rainy Season, Interphase, Udder Morphometry, Milk Yield, Composition, Bunaji Cows, Southern Guinea Savanna, Nigeria.