

# Assessing Nutritional Differences in Household Level Production and Consumption in African Villages

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Studies of agriculture often focus on yields and calories, but overlook the production of diverse nutrients needed for human health. Nutritional production is particularly important in low-income countries, where foods produced correspond largely to those consumed. Through an analysis of crops, livestock, and animal products, this study aims to quantify the nutritional differences between household-level production and consumption in the Millennium Village at Bonsaaso, Ghana. By converting food items into their nutritional components it became clear that certain nutritional disparities existed between the two categories. In Bonsaaso, 64-78% of households exhibited deficiencies in the consumption of Calcium, Fat, and/or Vitamin A despite less than 30% of households showing deficiencies on the production side. To better understand these differences, k-means clustering analysis was performed, placing households into groups characterized by nutritional means. By comparing the households in these groupings, it was clear that clusters formed around certain nutritional deficiencies. The socioeconomic characteristics of these groupings were then studied for correlations, concentrating on number of people at the household, sex and age of household head, and dependency ratio. It was found that clusters with high dependency ratios (the number of working persons in the household to non-working persons) exhibited a large variety of, and often drastic, nutritional deficiencies. In fact, the cluster with the highest average dependency ratio exhibited deficiencies in every nutrient. In light of these findings, regional policies may look to target households with a large number of dependents, and package nutrients for household distribution based on the characteristics of these clusters.