Monitoring rainfall data to estimate milk production in Mweiga location, Nyeri County, Kenya

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Abstract

Dependence on natural pastures with little or no supplementation makes the dairy production systems among small scale farmers in the East African region vulnerable to seasonal weather variations, characterized by low dry-season milk production and high wet-season production, sometimes exceeding the consumption capacity of the market. There is therefore a need to develop a method that can help farmers and policy makers estimate future milk production for purposes of planning, in order to avoid losses brought about by the excessive wet season production.

This paper examines the rainfall patterns and milk production trends over a period of three years between 2008 and 2010 in an attempt to establish a relationship between the two variables in Mweiga Location, Nyeri County, Kenya. It used monthly milk collection and rainfall data from Mweiga Location. The data were analyzed in order to establish the regression relationship between the two variables.

Results of the study show a very slight immediate influence of precipitation on milk production (r^2 = 0.089). However the influence after one month is considerable (r^2 = 0.415). The corresponding regression equation shows that the quantity of milk (kg) produced in the Mweiga Cooperative catchment area after one month is equated to the amount of rainfall received multiplied by a factor of 580 then add a constant 83300.

Keywords: livestock performance, precipitation

Introduction

Livestock in Mweiga Location are reared in an open grazing system sometimes with little or no grazing rotation. They rely on rainfed pastures that receive no supplementary irrigation throughout the year. Dependence on seasonal weather variations therefore, becomes a major influencing factor on their productivity, manifested in low milk production and loss of livestock body condition during the dry season and high production coupled with good body condition during the wet season. Sometimes the wet season is accompanied by such a high level of milk production that the capacity of the