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The effect of variable climatic conditions on animal production in a semi-arid communal farming system in South Africa

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Namaqualand is characterized by extensive livestock farming areas of which 1.3 million hectares (about 27% of the total area) fall under communal tenure. In spite of widespread commonages in Namaqualand little is understood about communal livestock farming with regard to the effect of seasonality and drought on the animal production system. This study aims to examine the effects of climatic variability on livestock fecundity and herd recovery in a communal area in Namaqualand. The variation in herd size and composition serve as an indication that a communal system should be viewed as a whole to understand the dynamics that exist within such a system.

The collection of data was confined to the Paulshoek Commons in Namaqualand, South Africa. Monthly weight gains of all small stock within the commons were recorded since January 2006 to strengthen an existing 10 year database on mortality, sales, births and slaughter of livestock. Long term datasets have been analyzed to determine general trends of livestock production in this area.

Results indicate that the livestock production system is highly dependent on rainfall. Livestock numbers decimate during drought years and recover rapidly during good rainfall years. There were no significant differences between the recoveries of small and large herds. This is a direct result of the farmer's management strategy to enter drought periods with more animals ensuring a higher survival rate for the next season. The weight gain of animals is highly correlated to rainfall patterns since the weights increase during the winter months and decline significantly during the dry period. This variation within the year dictates compensatory growth and higher survival rate during the dry period.

The variation of climatic conditions within years allows farmers to increase their income during wet years by keeping more animals thereby withstanding the loss incurred during drought periods. Market sales displayed this phenomenon. In a good rainfall year for 2006 that followed the drought period in 2003 a total income of ZAR 206000 for Paulshoek was yielded through livestock sales.

This study confirms that communal grazing areas in a semi-arid environment are indicative of a complex and dynamic animal production system that is dictated by environmental variability as well as the intricacies of people's livelihoods.