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Effect of Drought Adaptation Strategies on Goat Performance in NE-Brazil

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Abstract

Extensive small ruminant production is an important livelihood strategy for the rural poor in the semi-arid NE Brazil. However, recent studies indicated that frequent droughts along with forage shortage and degradation of the natural Caatinga rangeland were main problems perceived by livestock keepers threatening the sustainability of the farming and eco-systems. Farmers' most frequently suggested drought adaptation strategies were forage production, corralling animals and irrigation. Therefore, this study examined the effect of these drought adaptation strategies on livestock performance parameters such as drought mortality rate, live weight, body condition score (BCS), birth rate, age at slaughter and flock size dynamics of goats. Interviews were conducted with 120 goat farmers. Four systems were distinguished, i.e. goat farms 1. with corralling and irrigation (intensive), 2. with corralling and without irrigation (semi-intensive), 3. without corralling and with irrigation (semi-extensive), and 4. without corralling and irrigation (extensive). Data was analysed using GLM-ANOVA.

Results revealed that irrigation systems had significantly larger crop residue and forage areas than systems without irrigation. Semi-extensive systems had largest goat, sheep and cattle herd sizes and largest Caatinga area with lowest feed supplementation levels. Stocking densities were slightly higher in systems with than without corralling, particularly in irrigation projects. With respect to the goat performance indicators, only BCS was influenced by the system with significantly higher BCS (1.8) in intensive systems than semi-extensive systems (1.1) despite of highest feed supplementation levels in the latter system. Goat mortality was slightly ($p > 0.05$) higher in systems without than in those with corralling. Male goats seemed to grow slightly slower in more extensive systems as indicated by higher slaughter ages and lower carcass weights. In summary, intensive systems, particularly those with subsidised irrigation, showed highest goat performance values for which access to forage resources and better control of animals might have contributed. However, based on the multiple-factor approach, we could not reveal a significant effect of adaptation strategies on goat performance.

Keywords: Caatinga, drought adaptation, goat husbandry, goat performance