

## **Determination of the optimum herd size and the structure of livestock production: Case of Rumah rangeland area**

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Recently, the dependence of grazing practices on forage supplementation, water hauling, hired labor and other livestock production factors have been substantially increased. Since, livestock grazing practices in Saudi Arabia has changed from the traditional pastoral system to a more sophisticated, business oriented practice. Therefore, it is essential to study livestock production cost function on rangelands to determine the optimum herd size. The study is based on survey research of livestock production on rangelands (sheep, goats and camels) in Rumah area.

The cubic functional form for the total cost function is applied on two classes of grazers (only sheep and goats, and sheep, goats and camels) to determine the economical optimum herd size of livestock product. The relation between livestock product and the herd size is also considered. Results indicated that herds constitute of sheep, goats and camels are smaller than those of only sheep and goats for the same livestock product level. The economical optimum herd size of the first class (only sheep and goats) is 480, however, it is undetermined for the second class due to the dominance of the linear relationship on the total cost function. Increasing the livestock product by one animal unit is associated with increasing the herd size by 1.07 animal unit for the second class, where it is 2.55 for herd constituted of only sheep and goats.

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