Salt supplements can be effectively used to manage cattle hardy breeds for the restoration of shrub-encroached grasslands

Strategic Placement of Salt Supplements to Restore Shrub-Encroached Pastures. A Case Study from Italian Alps.

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INTRODUCTION
Socio-economic transformations occurred in Europe over the last decades led to a broad abandonment of mountain areas. Consequently, the processes of natural succession favored shrub and tree encroachment, resulting in a dramatic degradation of semi-natural grasslands. AGER iGRAL is a project aiming at assessing the effectiveness of the use of cattle hardy breeds for the restoration of woody-encroached pastures in Alpine and Mediterranean environments. For instance, the features of the Highland cattle breed make it suitable for the exploitation of abandoned pastures of the Alps characterized by rough terrain and abundant shrub cover. In the present work, the strategic placement of salt supplements was tested with the aim of increasing the frequation of shrub-encroached areas by livestock. The effects of cattle grazing and trampling on the vegetation structure around salt supplements was evaluated.

METHODS
In July 2019, a 24-ha pasture (Vogna Valley, Northwestern Italian Alps) was grazed by 72 Livestock Units of Highland cattle. Three poles with salt blocks and three paired control poles were placed in Rhododendron ferrugineum L. encroached areas for nine days. Shrub and herbage heights were measured within a 15-m radius around each pole before and after grazing using the sward-stick method. Measurements were performed along four axes of 15-m each, every 0.5 m from 0 to 5 m, and every 1 m from 5 to 15 m. Data were analyzed using GLMMs. The differences in shrub and herbage heights before and after grazing (i.e. height reduction) were used as response variables, the interaction between treatment (salt / control) and the distance from the poles as fixed factor, while the pair was added as a random factor.

RESULTS

DISCUSSION
The strategic placement of salt supplements for cattle resulted in the reduction of shrub and herbage heights around salt poles. The reduction was more pronounced (P < 0.001) near salt poles than areas located farther away, i.e. within a 3.5-m radius for shrubs and a 5.0-m radius for herbage. Results highlight that salt supplements can be an effective tool to change the spatial behavior of cattle hardy breeds and use them to restore shrub-encroached grasslands in the Alps.

EXTRA FIGURES

Figure 1 - Shrub and herbage height reductions along a 15-m radius around the salt and control poles

Figure 2 - Graphic representation of the vegetation survey in a 15-m radius around the poles

Figure 3 - The interaction Distance x Treatment for shrub and herbage height reductions

Figure 4 - The vegetation around a salt pole before and after grazing

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