



Paredes Diaz, D., Ramirez-Bribiesca, J., Montano, M., Ponce Covarrubias, J.,
Gómez Vázquez, A. and Lira-Casas, R. (2024)
'Use of calcium carbonate (limestone) to dehydrate orange peel and its incorporation into
sheep and goat diets',
Journal of Elementology, 29(4), ,
available: <https://doi.org/10.5601/jelem.2024.29.1.3272>



RECEIVED: 19 January 2024

ACCEPTED: 6 October 2024

ORIGINAL PAPER

Use of calcium carbonate (limestone) to dehydrate orange peel and its incorporation into sheep and goat diets*

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Abstract

The citrus industry produces a high amount of organic waste that contaminates the environment; using byproducts of this industry to feed small ruminants gives livestock farmers a socioeconomic advantage. The objective was to evaluate the drying of orange peel (OP) and the density of flies on it with different levels of limestone, and the performance in sheep and goats fed with a proportion of OP in a diet dehydrated with the inclusion of limestone. The results indicated that including 10% limestone decreased the proliferation of flies and dried the OP. The 50:50 amount caused more moisture loss and less fly proliferation in OP, but more limestone was wasted, and the calcium level in the formulated diet increased. Limestone inclusion improved the appearance of OP and visually decreased bagasse oxidation. Female lambs and goats were fed an energy ration with 10% OP dried with limestone, and conventionally, no significant differences ($p \geq 0.05$) in weight gain, feed consumption, and feed conversion were observed. The calcium and phosphorous content in the blood serum of the lambs and goats in this study indicates a normal status, and there were no significant differences ($P > 0.05$) between the groups. In conclusion, limestone as a source of CaCO_3 did not increase the economic cost of the diet; the proliferation of flies and the oxidation of OP were significantly reduced, making the preparation of the diets and their storage easier.

Keywords: lambs, goats, orange peel, limestone

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* The source of funding- LGAC: Ganadería eficiente, bienestar sustentable y cambio climático. COLPOS- México.