

#112-22-CIPAF

Technologies

Machinery of territorial impact

### **Horticulture Waste Silos as Feed Supplement**



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#horticulture #residues #vegetables #silage #forage #suplement for ovine and caprine

#animal #silage #recycle

One of the most significant limitations in caprine and ovine breeding is feed. In the Quebrada de Humahuaca (Argentina), forage is scarce during the winter-spring season because the different species in the natural grassland develop in greater quantity and quality during the summer, which is insufficient to obtain surpluses for the critical season. This project seeks to generate knowledge and technologies to use horticulture and agribusiness residues from the region to

create forage reserves (silage) as animal supplement during winter and spring, with a view to improving meat and artisanal cheese with the identity of the Quebrada.

Horticulture in the Quebrada de Humahuaca produces regionally in the opposite season from neighboring areas. It is mostly carried out by family farmers and in small extensions of land. The production and marketing strategy follows the dynamic and times of the production cycle and the inherent changes of the crops, due to the commercial volatility of this activity. Different causes lead the farmer to turn vegetables into residues, in the haste to occupy the planted area again. Estimations indicate that the losses in the overall vegetable marketing chain stand at 42.1% of total production. The proposal seeks to address two issues: the residues generated by horticulturists and the need of forage by livestock breeders in the critical season.

The silage process with grass crops enables to transform, delay and preserve it in time, by adding or returning value to the residue when transformed in feed (forage). Silage (preservation method) requires specific moisture. Crops are dehydrated by exposure to sunlight as required. The phases adopted to date are: gathering horticulture residues from farms; classification, dehydration and milling; sampling; micro-silage of 20 to 50 kg in 200µ bags; opening of micro-silos after 4 to 9 months for nutritional assessment pre and post silage.

This project may be replicated in other countries or regions with their own crops, where agriculture and livestock breeding are developed and articulated. Once the processing details are defined, it may be scaled by reutilizing horticulture residues in other regions of Argentina with equal or larger planted areas. By adopting new organizational and marketing strategies, local farmers, livestock breeders and young entrepreneurs will gain market access with an innovative product of vegetable origin.

1. Recycling residues from horticulture in their production cycle.
2. Covers forage needs of caprine and ovine breeders.
3. Forage of vegetable origin of excellent nutritional quality.

Requires food quality analyses. Requires testing on goats or sheep: habit formation, consumption and production evaluation; rations according to different nutritional requirements; maintenance; beef and dairy production; training of horticulturists on how to care for residues used in silage; training of livestock breeders in the use and preservation of silage; GMP in the manufacturing of silos for vegetable residues.