FONTAGROTECH

Transformation of livestock manure into biologicals through controlled anaerobic digestion to nourish crops.

BOLIVIA,COSTA RICA,PERÚ,BOLIVIA,PERÚ,COLOMBIA,ARGENTINA,BOLIVIA,PERÚ

Webstory

Technological solution

The technological solution consists of implementing a circular economy strategy for organic quinoa production, based on transforming livestock manure and other agro-industrial residues into high-quality organic bioinputs through controlled anaerobic digestion. This technology enables the proper treatment of residues, reduces methane emissions generated by their open-air decomposition, and produces solid or liquid fertilizers for soil and foliar application in quinoa crops. Through this approach, the aim is to improve plant nutrition, increase microbial diversity and soil organic matter, strengthen soil structure, and reduce its vulnerability to wind erosion, which is characteristic of the Altiplano.

Technological description

The technological solution proposes a strategy focused on the use of livestock and agro-industrial waste. Specifically, it involves processing livestock manure through controlled anaerobic digestion to convert it into high-quality biologicals (organic fertilizers). By collecting and properly treating manure, its decomposition in open environments is avoided, significantly reducing methane emissions to the atmosphere. These biologicals are then applied both to the soil and as foliar treatments in organic quinoa fields. This practice nourishes the crop, enhances microbial diversity, increases organic matter, and improves soil structure, making it less vulnerable to the wind erosion characteristic of the highlands.

Impacts and results

In response to low productivity conditions, the use of biologicals is expected to increase quinoa yields from an average of 603 kg/ha to approximately 1,100 kg/ha. Environmentally, the initiative will improve soil quality, increasing organic matter content by 0.8%, while reducing wind erosion by up to 35% through improved soil structure. Critically, controlled manure treatment will reduce methane emissions from livestock by up to 80%. In terms of capacity building, the project will empower Andean producers through knowledge transfer workshops and will deliver public goods such as measurement protocols, databases, and scientific publications to support the transition toward carbon-neutral systems.

~ 30 %
Production increase

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2
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