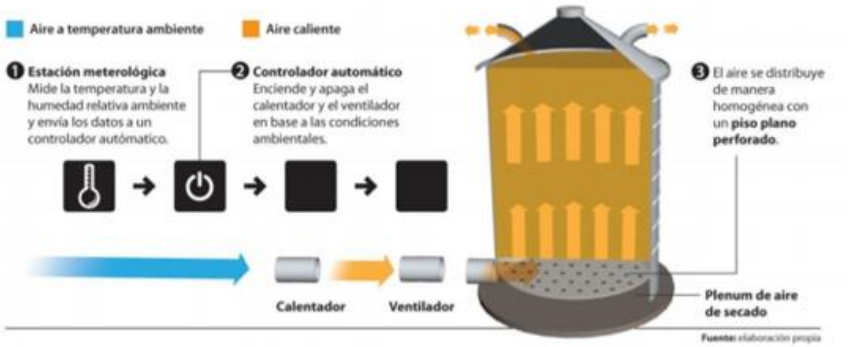
Technology

Storage and Transportation

Automated Grain Drying System



Regional Center: Buenos Aires Sur

Ricardo Bartosick

Diego Antonio de la Torre

Agro-Industry Workgroup

Post-Harvest Workgroup

Agricultural Experiment Station: Balcarce

https://www.argentina.gob.ar/inta/tecnologias/sistema-automatico-secado-de-granos

To date, silage has been successful with the following vegetables: Swiss chard, broccoli, cauliflower, eight-ball squash, sugar beet, iceberg lettuce, Batavia lettuce and bibb lettuce, celery, and spring onion. The first nutritional results are promising, since silos were stabilized at pH 3.6-3.9. The silage process enabled to preserve the nutritional value of the residues from the vegetables subject to examination. In the majority of the silos assessed, protein content was above 16% and in certain cases, between 20 to 21%, which makes them comparable to the protein content of alfalfa. On the other hand, all silos featured low content in the cell wall (NDF 26.80 ± 4.16 and ADF 19.91 ±3.52), and high-digestibility (IVDMD: 73.39 ± 2.72) that correlates with their high energy concentration (Mcal ME 2.65 ± 0.10). Initial consumption testing in goats determined that it is accepted and consumed without secondary effects (digestive issues).

This development is a novelty in Argentina. It is the first fully automated SSAN/BT (In-silo drying system with atmospheric air and/or low temperature) made in Argentina. It is also unprecedented worldwide, since it incorporates an automated control system that reduces the risk of overdrying and achieves high energy efficiency.

Simple to use, fully automated system.

Maximizes grain quality and energy efficiency of the process.

Minimizes the overdrying process.

Highly indicated to dry special grains or high-quality products, and for field drying (at the farm).

As the name indicates, grains are dried as they remain inside a silo, and air is forced through the product at atmospheric conditions or heated by only a few degrees. One of the main advantages of this solution is that it uses air at almost atmospheric conditions, resulting in energy efficiency of the burner and low risk of grain damage. In order to avoid the typical dependance of these drying systems on climate conditions, the INTA Silo-Dryer features a meteorological station, a drying prediction model and air heating system that have been optimized to enable conditioning of atmospheric air as climate conditions change. This system prioritizes grain quality and energy efficiency of the process over dryer yield (t/ha). Hence, it guarantees slow and homogeneous product drying without impairing quality attributes like germination power, expansion volume and milling yield, among others.

Transferred product.

Agreement No. SIGEC 23659 /PATENT:

Bartosik, R and de la Torre, D. 2017. United States - US 9,714,790 B2 - Procedure and facility for grain moisture control. Date of filling: July 25, 2017.

Bartosik, R and de la Torre, D. 2013. European Community - Procedure and facility for grain moisture control. Application number: 13382220.05-1605. Date of filling: 7-06-2013. Designated states: AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LI, LT, LU, LV, MC, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR.

Bartosik, R. y de la Torre, D. 2012. Argentina - Instituto Nacional de Tecnología Agropecuaria. Grain drying predictive control system in silo with natural air/low temperature. Authors: R. Bartosik & D. de la Torre. National Copyright Office of Argentina. Form E No. 07864, File No. 0002879, November 28, 2012.

Company in charge of disseminating the commercialization of this product: INTeA