

Grain maize preservation study

At the time of harvest, grain maize has a moisture content of 60 to 75 % and must therefore be dried or preserved before it can be stored. The best methods for drying and preservation were evaluated in a test carried out at Köllitsch.

Test procedure

Grain maize with a moisture content of about 75 % was stored in a bulk pile, while another batch was ensiled in silage hoses. Subsequently, the difference in feeding value and the preservation loss was analysed.

The grain maize was treated with a conventional product based on a combination of propionic and formic acid according to a dosing table. Some silage batches were produced with an ensiling agent, while others were treated with a biological lactic acid bacteria agent.

Some of the maize was not shredded and simply stored in a pile on the base of the storage hall. Other batches were shredded in a mill for moist maize and subsequently ensiled in silage hoses. The loss was determined by means of immersed nylon bags (yield screens).

Results

In all processes, the loss in feeding value determined by comparing the freshly harvested crop and the grain silage was minimal. The changes in the sugar content were within the expected range and mainly due to the lactic acid fermentation. There were however significant differences as regards the loss of dry substance, which was lowest in the batches treated with ensiling agent or preservatives. Chemical preservation resulted in lower dry substance loss than ensiling. Dr. Steinhöfel carried out a series of temperature measurements in test silos at Köllitsch designed to evaluate the preservation methods for cereal. The study shows that only cereals treated with propionic acid and cereals in silage can be stored without major energy loss. After the silo is opened, silage from cereal remains only stable if biological ensiling agents are added.

Crop		DM g/kg	pH	Sugar/kg DM g	DM Loss %
fresh		721	n.b.	19	-
ensiled	without additives	701	3,97	5	8,1
	biological ensiling agent	711	3,9	9	6,8
preserved	Propionic/formic acid	711	3,89	16	4,2