A to Z Textile Mills Ltd.
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Technical Product Information for AgroZ® Bag

Background

AgroZ® Bag is a hermetic storage bag developed by A to Z Textile Mills Ltd. through its R&D body, the Africa Technical Research Centre (ATRC) in order to reduce postharvest losses in maize and pulses mainly. It is a simple, convenient, affordable and organic response to insect's damage.

Specifications and description

AgroZ® Bag is composed of two distinct bags. One polypropylene outer bag and a multilayer liner. The multilayer liner is a co-extruded bag combining HDPE, MLLDPE and low permeability barrier layers preventing the passage of gases such as oxygen, carbon dioxide and water vapour. Its specifications are presented in the opposite.

A view of AgroZ® Bag

Thickness of the film: 90 microns
Total weight of liner bag: 190 g.
Surface density: 90.3 gsm
Colour: Clear
Dimensions: 130 cm x 80 cm
Bursting strength of fabric and seams: >357 KPa
Tensile strength: 64 Newtons /m2
Capacity: 100 kg, 90 kg or 50 kg
Oxygen Transmission Rate (OTR): 2.2 cc O2/m2/day

Mode of action

AgroZ® Bag is a hermetic storage bag. Once filled with maize and closed it acts as a strong barrier to oxygen. No more oxygen is getting inside the bag while the remaining oxygen inside is depleted by both the produce and the insects through their normal respiration (they consume oxygen and reject carbon diaoxide. **AgroZ® Bag is a fully organic solution for grain and pulses preservation and storage. It controls insect pests without any pesticide.**

What kills insects is the oxygen depletion hence the importance of having a good barrier to oxygen (or a low OTR). AgroZ® Bag is having the lowest OTR of any hermetic bag currently on the market

Condition of use

Hermetic storage bags should be used with grain which has been dried to the recommended moisture content. It is usually recommended to dry to 13-14 % moisture content. If grain is stored in hermetic storage bags without being properly dried (e.g. over 16%) the risk is to turn the produce into silage. This would result in a deterioration of the produce quality which is not the goal of hermetic storage bags.

Target pests and crops

Basically AgroZ® Bag should be used for the storage of grain and pulses. In the case of maize we recommend not to use it in areas with serious infestation of the Larger grain borer (LGB) adults, which are well adapted to chewing through both wood and plastic.

Crops	Pulses	Grain
Insects	Bruchids	Main pests
	Callosobruchus spp Acanthoscelides spp	Moths (Indian meal moth…) Beetles (Tribolium…) Weevils (Sitophilus spp)

LGB adults can perforate the liner and compromise the hermetic seal. The opposite table gives more details on the specific pests it can control.

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We do not recommend the use of AgroZ® Bag for the control of LGB as this insect when heavily present can perforate the bag.

Major Benefits

AgroZ® Bag main benefits are presented in the opposite table. It cannot control rodent and should not be used to control the larger grain borer (LGB).

Main additional benefits of AgroZ® Bag Plus	
Insects control except LGB	yes
Prevention of mold development	yes
Reduction of alfatoxin risk	yes
Grain quality preservation	yes
Protection against ambient humidity (water drops…)	yes
Protection against household animals (cats and others…)	yes
Protection against rodent	No
No need for pesticide treatment of the grain	yes
Prevention of weight loss	yes
Preserve seed viability	yes

Instruction for use

The figure below summarize the main instruction for use.

Safety considerations

AgroZ® Bag is completely safe. It does not contains any insecticide and can be considered as an organic solution to postharvest losses. **AgroZ® Bag is completely safe for the end users and the consumers.**

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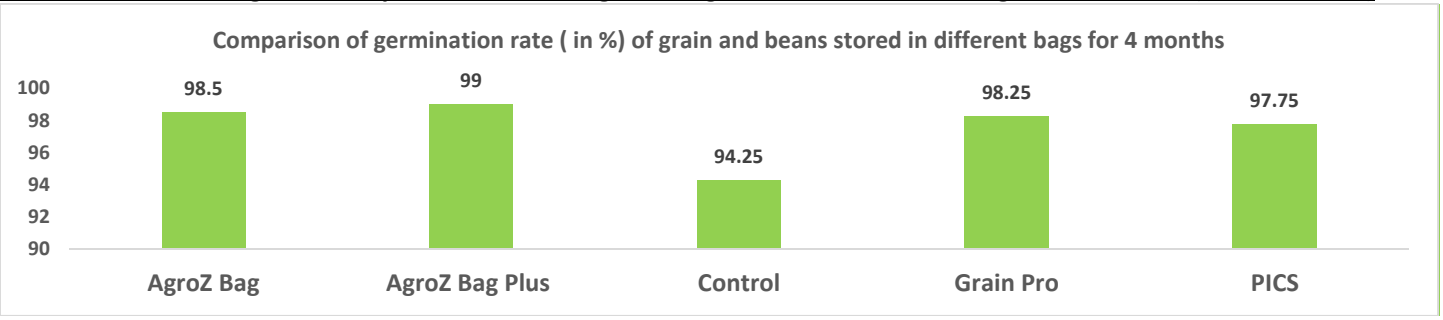
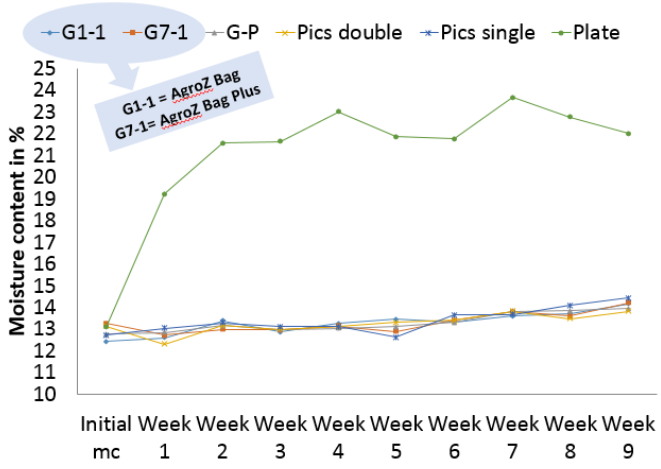
Key results and efficacy against the larger grain borer

Germination rate of grains and pulses stored in AgroZ® Bag and other hermetic bags for 4 months (Sources: TPRI)

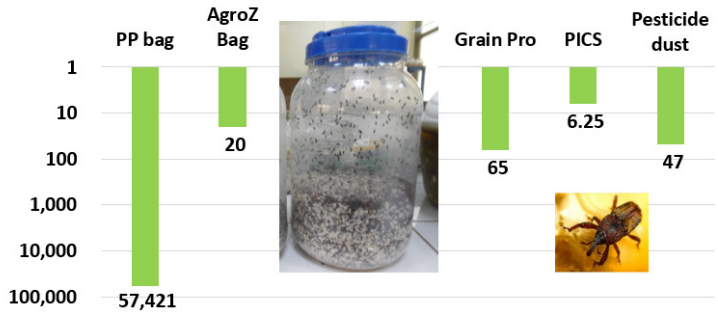


Progression of the moisture content of grains inside different hermetic bags and in an open plate exposed at 95% RH for 9 weeks. (Sources: ATRC)

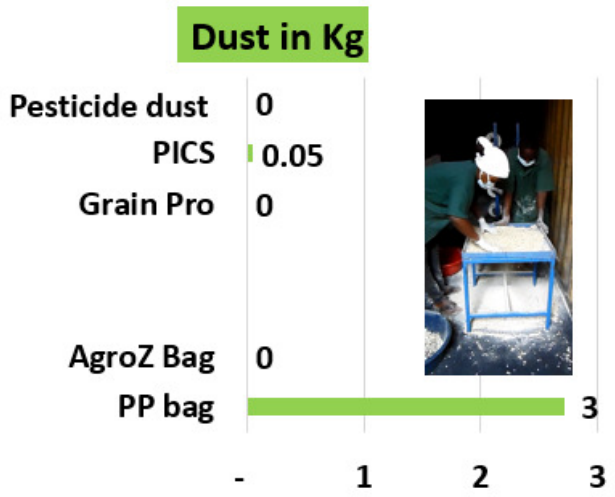


Efficacy against weevils: Comparison with other hermetic bags and a pesticide dust (Shumba = Fenitrothion+Deltamethrin) (Sources: ATRC)

87 kg of maize already naturally infested with Maize Weevils were kept for 7 months in different hermetic storage bags and compared with other solutions.



Damage reduction with AgroZ Bag on maize after 7 months (Sources: ATRC)



Effect of AgroZ Bag on beans (Sources: TPRI)