**////Title: Exploring How Mozambican Farmers Reinvent Crop-storage Practices**

**////Standfirst:**

International organisations have recently been trying to educate farmers in developing nations about optimal practices for growing and storing crops. While many farmers stick to these newly acquired practices, others eventually adapt them or slightly deviate from them. Researchers at Purdue University, Michigan State University, Iowa State University, and the Agricultural Research Institute of Mozambique recently carried out a study exploring how farmers have adapted an effective crop-storage practice in northern Mozambique.

**////Main text:**

In recent years, organisations and researchers have been trying to disseminate valuable information about the best practices for growing and storing crops in developing countries. These practices could bring great innovation, helping farmers to boost their harvests, protect crops from pests, and ultimately increase food security in their local communities.

In 2018, 10 farming communities in Northern Mozambique were trained on a promising 8-step protocol for storing beans after harvest. The technique is based on the use of jerrycans – robust containers that are often used to store water. The farmers were trained by local agents, using an animated video in Lomwe [lom-wee], the fourth most widely spoken language in the North of Mozambique.

The animated video was produced by Scientific Animations Without Borders – or ‘SAWBO’ – a platform created by Dr Julia Bello-Bravo, Dr Barry Pittendrigh [Pit-uhn-dree], and other researchers now at Purdue University. SAWBO is an educational platform that creates scientifically-accurate animated videos in a variety of different languages and dialects, covering numerous important topics related to health, society, agriculture, and sustainability.

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While the bean-storage training program in Mozambique was successfully executed, the extent to which the farmers stuck to the 8-step protocol and the effects of potential deviations from it had not been examined. Therefore, Dr Bello-Bravo, Dr Pittendrigh and their colleagues carried out a study to identify the percentage of farmers who continued to follow the protocol, and to investigate how farmers had adapted the method.

This new study was conducted two years after the farmers had received training on the bean storage strategy. This allowed the researchers to better examine the impact and long-term effects of the intervention through animated videos in local languages.

In collaboration with Sostino Macumbe [Soss-teen-oh Mah-kum-bee] of the Agricultural Research Institute of Mozambique, and Eric Abbott at Iowa State University, the team also explored the possible effects of deviations from the 8-step storage protocol.

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The bean storage strategy essentially consists of carefully cleaning and drying beans, and then storing them in sealed containers. By cutting off the oxygen that insects need to survive, this method has been shown to greatly reduce the risk of pest damage without the need for chemical insecticides.

In their follow-up study, the research team found that 91.3% of farmers who had participated in the video-based training reported using the bean storage strategy at least once, while none of the farmers reported that the strategy had failed. Almost half of these farmers said that they had deviated in at least one way from the 8-step protocol.

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There were two main types of deviations reported by the farmers. Firstly, approximately one in three farmers said that they had skipped at least one of the eight steps outlined in the SAWBO animated video. Although the reasons for skipping steps was not determined, the researchers speculate that this could be because farmers lacked some of the necessary tools or materials, or they decided to skip steps based on their own experience.

The second common type of deviation involved adding an additional step. Overall, one in five farmers said that they had added an extra step to the bean-storage procedure. More specifically, some of the farmers said they had opened the lid of the container once to check the beans, even if the animated video suggested keeping it sealed.

There are several reasons why participants might have decided to add other steps. For instance, they might have been trying to integrate traditional practices with the new strategy they had learned. Most notably, some of the farmers reported adding zinza [zin-zah] ash and piri-piri chili pepper to the beans, two ingredients traditionally used by farmers in some African regions to protect crops.

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Dr Bello-Bravo, Dr Pittendrigh and their colleagues also tried to determine whether the deviations from the strategy had positive, negative, or neutral effects on the harvested crops.

In terms of opening the lid once or twice, the researchers concluded that while it may not be advisable, it would not have made such a huge difference. In fact, past studies suggest that briefly opening sealed containers where crops are stored does not necessarily result in a greater risk of insect damage. A possible solution could be using transparent containers that allow farmers to check the beans without having to open the lid.

As for the second most common deviation from the 8-step process – the addition of ash or chili – the researchers suggest that while it could potentially introduce moisture, it should not dramatically impact the effectiveness of the storage strategy.

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The team’s study offers valuable insight that could inform future initiatives aimed at educating farmers in developing countries. In the future, the observed deviations from the storage protocol could be addressed in SAWBO animated videos or in other educational content for Mozambican farmers.

This recent work also highlights the importance of evaluating the impact and effects of interventions aimed at introducing farmers to new crop growing and storage practices, as well as examining the possible deviations from these practices and their effects.

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This SciPod is a summary of the paper ‘Identifying and evaluating farmer deviations from steps recommended for hermetic postharvest storage of beans in northern Mozambique’, from the *Journal of Stored Products Research.* [doi.org/10.1016/j.jspr.2020.101628](https://doi.org/10.1016/j.jspr.2020.101628)

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