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Indigenous Postharvest Protection Measures Commonly Practiced by Farmers. A Mini Review

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Abstract

This paper aims to review some of the available literature on Indigenous Postharvest Protection Measures Commonly Practiced by Farmers. Indigenous knowledge is the knowledge of the indigenous people inhabiting different geographical regions of the world with their own language, culture, tradition, belief, folklore, rites and rituals. This report is an attempt to document some of the indigenous practices followed by traditional farmers for the management of storage pests. The increasing public awareness of the environmental contamination by toxic chemical residues has necessitated the research and development of non-chemical methods. In the present study, reviewed different agricultural relevant Indigenous post-harvest protection Knowledge practiced by farmers.

Keywords: *Stored grain pests, Indigenous knowledge, Storage*

Introduction

A complex interplay of various factors contributes to the loss of grains that occurs in the post-production system. The losses within the system and at each stage/step of the value chain are most often attributed to the following elements or group of general factors: biological and/or microbiological; chemical and biochemical; and mechanical, environmental, and socioeconomic factors [1].

In Africa, at the farm level, producers store their grains for three purposes: for consumption until the next harvest, as seed for planting in the next season and for selling when prices become favorable. In many developing countries, including in Ethiopia, grain storage practices involve traditional structures, which are largely ineffective in the prevention of deterioration of stored products [2].

The majority of framers in Ethiopia use traditional storage containers that exposes stored grains to storage insect pest, mold and other lose factors [3]. According to [4], postharvest losses of all the crops in Ethiopia have been estimated to be between 10 to 50%. [5] estimated postharvest loss of maize, sorghum, wheat, and haricot bean to be approximately 21.4, 32.9, 18.4, and 25.2%, respectively.

However, these losses occurring in the postharvest system have not been given the attention they deserve and have even been neglected for a long time [6], Many authors in the postharvest sector realize that appropriate postharvest management (PHM) is the missing link between production and consumption [7], contributing significantly to the food insecurity problem.

In Ethiopia, there are about a dozens of species of insect pests of stored grains. Our efforts to combat these pests by indiscriminate use of the pesticides have created several environmental hazards and these necessitated the reorientation of our strategies to pests and disease management in an eco-friendly manner. The increasing public awareness of the environmental contamination by toxic chemical residues and public perception about the use of eco-friendly methods in agricultural and public health care programs have necessitated the research and development of nonchemical methods. Modern scientific agriculture is committed to cater the need of global market but agricultural practice of traditional farmers if also taken in account would synergize the productive goal of present day agro-ecosystem. Farmers have tested these traditional technologies in their own fields and developed them in such a way that they are totally self-reliant and sustained with

these technologies. The present of this review objective is to gather and document available information regarding different indigenous knowledge of storage against insect pests and recommend effective storage method that could minimalize maize loss during entire storage at different agro-ecological zones.

About indigenous/traditional knowledge

Traditional agricultural practices and cultivars have profound effect on modern day agricultural and plant materials. It is of prime importance to know and understand the Indigenous Knowledge (IK) available with the farming community in the country. IK may be defined as a means by which the inputs are transformed into outputs [8]. Indigenous knowledge contains ideas, beliefs, values, norms and rituals, which are native and embedded in the mind of people. IK refers to the unique traditional local knowledge existing within and developed around the specific conditions by women and men indigenous to particular geographic areas [9]. IK has gained through a series of observations and they are passed generation to generation orally and keep on changing after receiving constant stimuli from outside [10]. IK is developed by people of a particular region through their own experience [11].

Indigenous storage pest management practices.

[12] reported different indigenous *storage* practice in India such as storage pulses with Naithulasi (*ocimum* sp.) and chilli (*capsicum annum*), farmer practice neem leaves against storage pests, storage pulse with sand, mix of pulse seed with coconut oil, splitting of pulse before storage, frying of pulse grain and pulse seed coated with red earth for storage. Other study made by [13], also reported from Tharu village Nepal for control storage pest farmers with seed wheat with mustard oil cake powder, use sunbaked mud bins with simple gunny storage, sun drying and sacred in storage management. As indigenous items and methods were used for storage of household items including food items, clothing and bedding etc.

The shelf life or storage span of items was increased using readily available and low-cost items like mineral substances (ash, sand, table salt, camphor, and inert dust) and other different plant materials [14]. Mixing the dried leaves of notchi (Vitex negundo) with seeds/ grains while storing them. Storing the seeds after mixing with pungam (Pongamia pinnata) leaves. Pulses and food grains are stored in gunny bags, which are previously wet with 10% salt solution and dried, in order to avoid storage pest attack [4].

Used table salt for storage of rice grain. After sun drying of the grains, salt was mixed with rice grains during storage which provided ample protection against storage insect pests. In another indigenous practice. [15] demonstrated that thin paste mixed with cow dung, clay and cow urine was applied on storage yarns to make them air tight. Cow dung and urine have antimicrobial and insecticidal properties and provided better results for the storage of both Kharif and Rabi crops.

Research report by [16] (Kasirayi and Munamato , 2016) under the title of Smallholder farmers' indigenous knowledge of maize storage pests and pesticide plant use in Zambia indicated that farmers commonly used botanical pesticides in the two wards were gumtree (Eucalyptus spp), tamboti (Spirostachys africana) , lilac tree (Melia azedarach) , sunflower (Helianthus annuus) ash, cow dung, lemon bush (Lippia javanica), murwiti (Rapanea melanophloeos) , sweet basil (Ocimum basilicum) and finger millet (Eleucine coracana) chuff, wood ash and mixtures of the above mentioned botanicals . The botanicals are mixed with maize grain before storage either in sealed hessian bags or as loose grain placed in the granary plastered with cow dung

Conclusion

Use of chemical pesticides leads to increased environmental pollution, damage the soil texture, impart adverse effects on the human health and insects also develop resistance to pesticides. Keeping in view the advantages of traditional Indigenous Postharvest Protection Measures Commonly Practiced by Farmers, the agricultural extension workers should encourage and disseminate the use of indigenous knowledge methods on target scale in farming community.

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