User-friendly Storage Practices Followed by Rural Women of Rajasthan

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Storage of household items is the responsibility of the homemaker who uses different methods, products, and containers to store items like semi-perishable and perishable food, clothing, and bedding. Storage of these items is necessary to prevent spoilage, increase usability and durability, and also to add to monetary reasons.

The practice of using natural sources for storage of various household items dates back to the very earliest periods of known human history. There is evidence of ash, sand, and herbs used in ancient civilization and these materials have been credited with mystical power for increasing storage life. Many of these practices find credibility even in this modern era. The logic behind the use of these materials is that they are user-friendly and are associated with scientific reasoning that provides enjoyment and satisfaction to the users. Such practices are generally based on locally accessible and available natural resources. An effort was thus made to find out the traditional practices followed by rural women for storage of household items so that the scientifically correct practices can be documented and promoted.

Methodology

The study was undertaken in five major agroclimatic zones of Rajasthan, India covering five districts namely Jodhpur, Sikar, Ajmer, Jhalawar, and Bhilwara. From each district, four villages were selected purposively. From each village 15 farmwomen were selected randomly. The sample consisted of 60 rural women from each district and in total 300 rural women were selected. The information was collected through group discussion with the help of a schedule.

Major findings

The practices followed for storage of various commodities and the possible mode of action are presented in Table 1.

Table 1. Practices followed for storage of various commodities by rural women of Rajasthan, India.

Commodity	Natural resource(s)	Method of use	Possible mode of action
Storage of food commodities			
Wheat	Dry neem leaves	Make cloth bags of dry neem leaves and place them at bottom, middle, and top of the container.	Neem leaves are sterilant, anti-parasitic, insect and pest repellent, antifungal, and non-toxic and thus prevent spoilage of grains.
	Match boxes	Keep match boxes in layers. Place 6–8 boxes at the bottom, middle, and top of the container.	Match sticks have phosphorus, which is anti-repellent in nature.
	Cow dung ash	Add cow dung ash to the grains and mix well.	Cow dung ash is dessicative and insecticidal in nature.
Rice	Turmeric powder	Mix turmeric powder thoroughly with rice grains and fill in jute bags/airtight containers.	Turmeric has pesticidal, insecticidal, and antifungal properties. It also has hygroscopic and insecticidal properties.
`	Calcium carbonate (limestone)	Powder the limestone and mix thoroughly with rice grain.	Calcium carbonate is inert and discourages insects from feeding and multiplying.
	Garlic	Put cloves of garlic in different layers of stored rice and close the container tightly.	Garlic is insecticidal and antifungal and thus prevents infestation in rice.
	Clove (*Syzygium aromaticum*)	Put 20–30 cloves at the top layer of the rice bag/ container and close the container tightly.	The strong flavor and bitterness of cloves protects the grain from spoilage.
Pulses	Edible oil and salt	Mix 5 g oil and one tsp salt for one kg pulse before filling in airtight containers.	Oil is anti-feedent or feeding repellent and lubricating. Salt is hygroscopic and insecticidal and thus protects the pulses from spoilage.
Spices	Asafetida (*Ferula assafoetida*)	Place a small piece of 5 to 10 g asafetida in the middle layer of the container or just below the top layer or tie the piece in cloth and place in the middle layer.	The strong/pungent flavor and insecticidal and anti-microbial properties of asafetida prevent the spices from pests and insects.
	Common salt (crystals or powder)	Mix common salt in chili powder and coriander powder for longer storage.	The insecticidal property of salt helps in safe storage. Its hygroscopic quality helps in absorption of moisture which in turn keeps chili powder dry and avoids spoilage.

	Sun drying	Dry processed foods like *papad*, *badi*, and chips lightly in sun for 2–3 hours and then store in airtight containers.	The sun's heat absorbs the moisture content of the products and protects from infestation.
Dalia (coarse ground wheat)	Heat treatment	Roast wheat *dalia* without adding any oil/ghee. Cool and then fill in airtight container.	Roasting reduces the moisture of the product and helps in longer storage.
Tamarind	Common salt	Mix common salt in seedless tamarind and dry well in sun for 3–4 hours. Make small balls and store in airtight container/earthen pot.	The insecticidal property of salt increases storage life.
Mango (dry powder)	Common salt	Mix salt in dried mango powder and then store in airtight container.	The insecticidal property of salt increases storage life.
	Turmeric powder	Mix turmeric powder in mango powder before storage.	Turmeric kills the microorganisms and protects the product from infestation/spoilage.
Pure ghee	Betel leaf (*Piper betle*)	Add 1 betel leaf while heating ghee and boil it for 5–10 minutes. Then strain it, cool, and store it in airtight containers/jars.	Betel leaf has dessicative property and prevents bad odor during storage.
	Methi (*Trigonella foenum-graecum*; fenugreek) and curry leaves (*Murraya koenigii*)	Add 1 tsp *methi* powder while heating ghee and boil it for 5 minutes. Let it cool slightly and then add few curry leaves and stir well. After 15–20 minutes, strain it and pour in airtight container.	*Methi* is bitter, aromatic, and anti-microbial. Curry leaves are bitter, acrid, and anti-microbial in nature. Both help in increasing shelf life of ghee.
Storage of clothing			
Silk and *jari* garments	Newspaper	Wrap garments in newspaper after dry cleaning or sun drying and then keep in suitcase or trunk.	The printer ink acts as disinfectant and keeps moths and silverfish away.
Woolen garments	Neem leaves and cloves	Tie few neem leaves and cloves in muslin cloth and place in between the folds of the garments.	Neem acts as an insect repellent. The strong flavor and bitterness of cloves prevents damage against moths and silverfish.
	Dry neem leaves	Spread neem leaves at the bottom of the trunk and cover this layer with newspaper or cloth before placing the garments on it.	Neem leaves are sterilant, insect and pest repellent, and non-toxic and thus prevent damage against moths and silverfish.
	Kalaunji (*Nigella sativa*; black cumin)	Make bags of *kalaunji* and place them in between the clothes.	*Kalaunji* seeds are aromatic, bitter, and insecticidal in nature.

	Black pepper and cloves	Keep black pepper and cloves in between the folds of the garments.	The pungent flavor and aroma of the spices prevents the attack of moths and silverfish.
	Dry garlic	Wrap dry garlic cloves in cloth and place them in between the folds of the woolen garments.	Garlic is insecticidal and thus prevents attack of moths and mildew.
	Eucalyptus leaves	Spread eucalyptus leaves at the bottom of the trunk and cover with newspaper or cloth before placing the woolen garments on it.	Eucalyptus leaves have strong flavor that acts as an insect repellent.
	Lemon shell	Keep dried lemon shell in the trunk or cupboard where garments are stored.	The aromatic property of lemon acts as a moth repellent.
	Newspaper	Wrap woolen in newspaper and store in airtight suitcase/trunk.	The printer ink acts as an insect repellent. The larvae of wool moth dislike printer ink.
Storage of bedding			
Bedding	Sun drying	Sun dry bedding like mattresses, pillows, blankets, quilts, and durries before storing.	The strong sunlight kills the bacteria present and also makes the bedding free from bad odor.
	Camphor	Spread camphor inside pillows and on mattresses before storing.	The strong flavor of camphor protects from attack of bed bugs.

Conclusion

In order to ensure keeping quality of food products and other materials at domestic level, there is a dire need to follow scientific storage practices. These practices are governed by materials and methods used for storage purposes. Since rural women are the custodians of what has been produced on the farm both for household use and commercial purposes, they must be encouraged to use only those eco-friendly practices that are known to be both safe and effective. These practices must be modified to make them more efficient for further transfer to the end users in the future.