



Best Practices for Managing Awassi Sheep

# Urea Treatment of Straw

9

**Best Practices for Managing Awassi Sheep**  
**9-Urea Treated Straw**

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## Foreword

This booklet is part of a 11-part series of technical guidelines describing the best practices for managing Awassi sheep; the dominant sheep breed in several countries across the Middle East. The series is targeted at sheep farmers and milk processors, and provides practical, easy-to-follow advice on managing Awassi sheep in dryland conditions.

Efficient husbandry, feeding and milk processing are crucial in the management of Awassi sheep in dry areas; but many small-scale producers are unfamiliar with simple productivity-enhancing practices. This series aims to fill that information gap, and thereby enable farmers to increase their income from livestock while using resources more efficiently and sustainably.

The series draws on the practical experience of researchers, as well as the extensive literature, to capture scientific and local knowledge in an easily accessible format and language. The bulletins are organized in accordance with the sheep management calendar and describe the management of Awassi ewes during important physiological stages throughout the year. Supplementary guidelines provide additional information at each stage.

These booklets were produced as part of an IFAD-ICARDA project aimed at scaling up best practices for managing Awassi dairy sheep to small-scale sheep farmers in West Asia, a project implemented in Syria and Lebanon in collaboration with IFAD development projects in both countries.

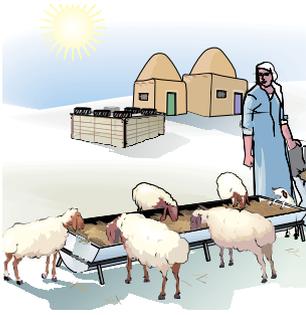
We would like to thank all those involved in the preparation of these guidelines and also for IFAD's financial support to this important project. We expect these booklets will be useful to sheep farmers, milk processors, extension staff, as well students of agricultural development for knowledge transfer purposes.



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## Urea treatment of straw - overview

Treating straw with urea improves its nutritional value by increasing nitrogen content, digestibility, palatability, and intake of the treated straw

Farmers confirm that feeding urea-treated straw positively affects sheep's productivity and health.

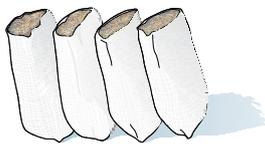
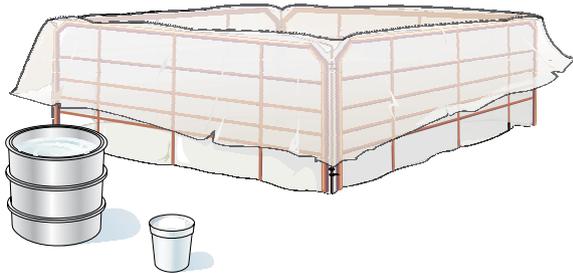
Farmers confirm that feeding urea-treated straw positively affects sheep's productivity and health.

We advise treating the straw with urea when its price compared to concentrated feed is low and when green fodders are not available.

Urea is easy to store and dissolves in water. For your safety, please follow the instructions in this booklet.

When treating straw with urea, use a good quality straw (dry and free of rots, mold, and soil).

## Preparation of Urea solution



100 kg straw



4 kg urea

40 L water

Using 4kgs of urea in 10 liters of water to treat 100 kgs of straw is the optimum ratio for the intended result. Farmers should weigh 4kgs of urea in a container, mark the urea level on the side, and then use the same container for future calibration. Or count the numbers of sacks, each constituting 100 kgs of straw, instead of repeated weighing.



Use a garden watering sprayer to treat 100kgs of straw evenly spread in the form of a layer. It is preferable to perform mixing and pressing after spraying. When 100kgs of straw is treated, add another layer (100kgs) of straw and treat. Repeat the process to reach the quantity required.

#### Duration of the treatment and ambient temperature

Temperature affects the reaction rate. During summer, when the ambient temperature is often above 30°C, one week is enough to complete the reaction. If the ambient temperature is below 15°C, two to three weeks may be required to complete the chemical reaction. Generally, we do not recommend the treatment in a cold atmosphere (below 15°C).

#### Incubation

Generally, for treatment of small straw quantity, plastic sheets supported by metallic frames is used to enable good pressing to obtain a density of about 100 kgs per 1 cubic meter.

The pressed straw is let for a certain period known as incubation period that is needed to complete the chemical reaction.

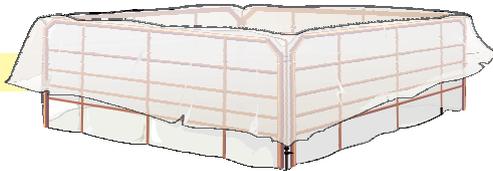
## Method of treating straw with urea

1



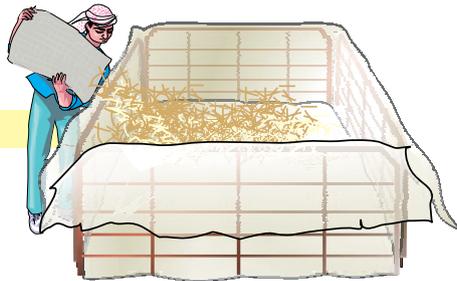
Make an enclosure using metallic barriers such as those used to separate sheep.

2



Spread a plastic sheet on the enclosure's floor and stretch and span over the enclosure to cover the straw later.

3



Spread 100kgs of straw evenly over the plastic sheet.

4



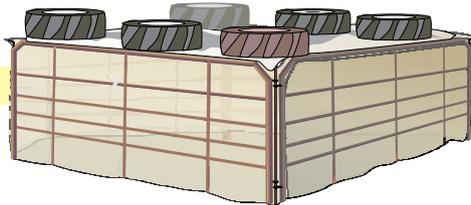
Spray the straw with the urea solution (4kgs of urea dissolved in 10 liters of water) using a garden watering sprayer

5



Stir the sprayed straw to obtain an even distribution and press with feet for suitable pressure. Add another layer of straw and repeat the process until the required quantity is achieved.

6



Wrap the straw heap tightly with the plastic sheet and place heavy objects on top (e.g., used and heavy tires)

After one to six weeks, depending on ambient temperatures, unwrap the straw heap then stir the straw for aeration and drying. When dry, the newly treated straw can be fed to the animals or stored until needed.



## Characteristics of urea – treated straw



### Odor

An ammonia odor should be emitted when withdrawing straw from the treated heap. Animals are not troubled by the odor, and its absence indicates faulty or reduced treatment efficiency.



### Colour

As temperature increases, the growth of bacteria increases. Well treated straw takes on a brown or chestnut color. The color should be even across the straw. Lighter colors indicate a weak chemical reaction of the straw with the urea.



### Texture

Well treated straw becomes flexible due to water addition. Discard straw if excessively wet, black in color, or rotten, as this indicates faulty treatment. Avoiding the use of an excessive quantity of water prevents its accumulation in the lower strata of straw.

### Rot

Well-treated straw does not contain mold, because ammonia hinders mold growth. The absence of mold indicates tight and optimal plastic coverage of the heap. Feeding rotten straw to animals can lead to digestive issues.

## Health Aspects of Urea-treated Straw

If adequately prepared, urea-treated straw is nutritionally safe because the urea is evenly diluted and mixed well with the straw.

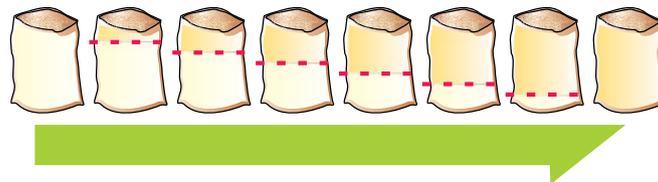
Although treated straw contains more nutritional value than untreated straw, the nutritional value of green fodders is still higher.

Feces of lambs fed with urea-treated straw may become viscous. This does not constitute any health problems.

The livestock owner should consult with the extension agent in his region to obtain a detailed consultation.

### Feeding urea – treated straw

Introduce urea-treated straw to livestock gradually every day until the untreated straw is entirely replaced within a week. Feeding on concentrate feed is reduced afterward.





## Best Practices for Managing Awassi Sheep

- 1 Mating Period
- 2 Pregnancy
- 3 Lambing
- 4 Lactation Period
- 5 Milking and Milk Processing
- 6 Sheep Selection
- 7 Health Care Guide
- 8 Feed Reference Guide
- 9 Preparing Urea Treated Straw
- 10 Body Condition Scale
- 11 Lamb Fattening



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