ANNEX
Project of Fact Finding Survey for Poverty Reduction and Sustainable Agricultural Development in Myanmar

2015
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Purpose of Research in 2015

It is necessary to improve the quality of rice so that rice miller can sell rice with high price. Purpose of research in 2015 is to research present condition and training to record each figures with detail numbers for below contents.

- Reduce rice price loss because of quality loss
- Reduce rice amount and price loss during storage

Value Loss of Rice

Inclusion of red or yellowed rice decreases the value of rice and its brand image

- Inclusion of red rice
  - Price loss by 10~20%
  - Refused by rice millers if large amounts
- Inclusion of yellowed rice
  - Price loss by 5~20%
  - Refused by exporters even if small amounts

- Including Red: 100%
  - Cat. Rate: 0.5%~37.7%
- Including Yellow: 84%
  - Cat. Rate: 0.5%~8.2%

Inclusion of red or yellowed rice decreases the value of rice and its brand image.

Training on measurement of moisture content

Moisture Contents must be less than 13.5%

What’s moisture content

Wt: Moisture (M) % = \( \frac{W \text{ kg} - D \text{ kg}}{W \text{ kg}} \times 100 \)

M1 % = \( \frac{W_1 \text{ kg} - D \text{ kg}}{W_1 \text{ kg}} \times 100 \) - ①
M2 % = \( \frac{W_2 \text{ kg} - D \text{ kg}}{W_2 \text{ kg}} \times 100 \) - ②

Delete Dkg from ① and ②

W2 kg = \( \frac{100 - M_1 \text{ %}}{100 - M_2 \text{ %}} \times W_1 \text{ kg} \)
Measurement Method of Moisture Content

- **Direct Method**
  - Remove all moisture from rice, and calculate moisture content based on weight difference after and before drying.
  - Standard Method: Grind 5g rice, and dry up 5 hours with 105℃.
  - Infrared Moisture Meter

- **Indirect Method**
  - Calculate moisture content based on physics character. (correct by direct method)
    - electric resistance type
    - electric capacity type

Procedure to measure moisture content

- **Handy Moisture Meter (Electric Resistance)**
  1. Record result after 5 times measurement (Remark: Keep grinded sample into plastic bag)
  2. Ignore maximum and minimum value, calculate average value of remaining values.
- **Infrared Moisture Meter**
  1. Use same sample which used for handy moisture meter. (Grinded)
  2. Set infrared moisture meter FD-720 as below.

<table>
<thead>
<tr>
<th>Temp.</th>
<th>Weight</th>
<th>Mode</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>120℃</td>
<td>7g</td>
<td>AUTO 0.05%</td>
<td>AUTO</td>
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</table>

Key Point of Measurement of Moisture Content

- **Paddy**
  - Moisture content of paddy is not even, so please measure minimum 5 times and calculate average.
  - Brown Rice: Husk paddy and measure moisture content
  - Moisture content of brown rice may be higher than paddy because moisture content of husk is lower than brown rice.
  - Control of moisture content of paddy during storage can be done by measuring moisture content of brown rice. For this case, please husk paddy by manual husker.

- **White Rice**: Mill brown rice and measure moisture content of white rice.
  - During milling, rice will be dried up because of milling heat. So moisture content of white rice will be lower 0.2-0.8% than brown rice.
  - Measurement result by electric resistant type moisture meter will be higher than actual value if it will be used for rice with high temperature. So please wait until temperature will be same as room temperature by keeping rice in plastic vacuum bag.

Measurement of paddy moisture content with the calibration curve for Japanese rice

- **Measurement of paddy moisture content with the calibration curve for Myanmar rice**
Equilibrium moisture content of paddy

Change over time of Paddy Moisture Contents in Japan

Installation of 2 data loggers which record temperature and humidity every 30 minutes

Change over time of Paddy Moisture Content by Equilibrium Moisture Content
Moisture Control by Equilibrium Moisture Content

Classification of rice in Myanmar market
There are 5 categories divided by forms of rice for export.

According to 5 farmers and 6 millers,
The 5 categories are not used domestically as rice is distributed by the variety names.
Some mentioned they might be used in the international trades.

Reduce rice price loss because of quality loss

- Enlightenment of moisture control

Cause for rice price loss

Season of Yellowed rice occurrence

Duration of storage

Recognition survey of farmers and millers on quality of rice
Issues left over from projects in 2015

1) Fact-finding survey on price loss
   - Necessary to obtain actual picture of price loss across the country
   - Necessary to set quality standards for Myanmar rice shown in pictures, charts and tables

2) Moisture control
   - Necessary to promote a numerical management system of moisture by using moisture meters
   - Necessary to set standards for paddy moisture content

3) Environment survey during storage (changes of paddy moisture over time)
   - Necessary to have a confirmation test during full-fledged rainy season in June ~ July

4) Promotion of a joint purchase of machinery and equipment
   - Necessary to build an organization like agricultural corporation to introduce combines and dryers