“Anpo-kaki (dried Japanese persimmon)” in actual practice in Fukushima prefecture
(Re-establishing the historical and traditional industry of “anpo-kaki” and resumption of the processing model district)

JA Fukushima Mirai, Standing Director Seiichi Kazumata
Birth of JA Fukushima Mirai

History of the merger

March 2016 Four JA districts in Fukushima, namely Fukushima city, Date, Adachi, and Souma, were merged (Former JA names: New Fukushima / Date Mirai / Michinoku Adachi / Souma)

Administration of the JA district 12 municipalities

(Fukushima city, Date city, Nihonmatsu city, Motomiya city, Souma city, Minami-souma city, Kawamata town, Koori town, Kunimi town, Shinchi town, Ootama village, litate village)

Profile at the time of the merger

<table>
<thead>
<tr>
<th></th>
<th>End of 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Union members (including Union associate members)</td>
<td>94,645 (46,943)</td>
</tr>
<tr>
<td>Capital</td>
<td>14,230,000,000 yen</td>
</tr>
<tr>
<td>Executives (including standing directors)</td>
<td>55 directors, 8 auditors/secretaries, 18 persons</td>
</tr>
<tr>
<td>Number of regular employees</td>
<td>1,903</td>
</tr>
<tr>
<td>Associate employees</td>
<td>512 persons</td>
</tr>
</tbody>
</table>

Fiscal 2015 Operations

<table>
<thead>
<tr>
<th>Business items</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Account balance</td>
<td>715,100,000,000 yen</td>
</tr>
<tr>
<td>Balance of loan</td>
<td>147,400,000,000 yen</td>
</tr>
<tr>
<td>Long-term mutual aid reserves</td>
<td>280,120,000,000 yen</td>
</tr>
<tr>
<td>Commodity sales</td>
<td>2,730,000,000 yen</td>
</tr>
<tr>
<td>Procurement supply amount</td>
<td>1,760,000,000 yen</td>
</tr>
</tbody>
</table>
Earnest desire to protect historical production land

Decontamination and cleaning of fruit trees in midwinter: countermeasure operations for absorption control in rice fields

“All work should be carried out as joint operations and with the same viewpoint”

Joint cleaning operations in midwinter using a high-pressure washing machines
1 city 2 towns’ 390 team system / total 35,000 persons
(a health checkup was carried out for each member after operations were completed)
Preparation of a 500 mesh map of the district for soil survey
  *Date city, Kunimi town, Koori town

Absorption control material for rice fields was distributed
Joint operation by 90 trucks in the district
10a／zeolite 200kg, potassium silicide 200kg (2012, 2013)
(a health checkup was carried out for each member after operations were completed)
100 mesh map of the district, Approx. 3,000 locations (Cs. soil chemical property)
(Carried out before tilling and after harvest)
Achievement of decontamination of fruit trees aimed for as much ND as possible (March 2012)
(Achievement in the former Date Mirai district)

<table>
<thead>
<tr>
<th>By tree species</th>
<th>Number of treated trees</th>
<th>Number of locations in the operations</th>
<th>By tree species</th>
<th>Number of treated trees</th>
<th>Number in the operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peach</td>
<td>199,896</td>
<td>8,938</td>
<td>Grape</td>
<td>8,736</td>
<td>846</td>
</tr>
<tr>
<td>Persimmon</td>
<td>257,517</td>
<td>24,847</td>
<td>Yuzu Citrus</td>
<td>356</td>
<td>98</td>
</tr>
<tr>
<td>Ume (plum)</td>
<td>11,839</td>
<td>2,563</td>
<td>Chestnut</td>
<td>616</td>
<td>137</td>
</tr>
<tr>
<td>Apple</td>
<td>30,197</td>
<td>1,620</td>
<td>Prune</td>
<td>200</td>
<td>44</td>
</tr>
<tr>
<td>Japanese pear</td>
<td>794</td>
<td>230</td>
<td>Loquat</td>
<td>36</td>
<td>19</td>
</tr>
<tr>
<td>Fig</td>
<td>6,611</td>
<td>183</td>
<td>Chinese quince</td>
<td>51</td>
<td>29</td>
</tr>
<tr>
<td>Plums</td>
<td>11,951</td>
<td>1,169</td>
<td>Pomegranate</td>
<td>141</td>
<td>31</td>
</tr>
<tr>
<td>Gingko</td>
<td>649</td>
<td>50</td>
<td>Blueberry</td>
<td>243</td>
<td>4</td>
</tr>
<tr>
<td>Western pear</td>
<td>3,367</td>
<td>125</td>
<td>Apricot</td>
<td>878</td>
<td>93</td>
</tr>
<tr>
<td>Yellow peach</td>
<td>5,931</td>
<td>428</td>
<td>other</td>
<td>8,634</td>
<td>724</td>
</tr>
<tr>
<td>Kiwi fruit</td>
<td>873</td>
<td>139</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Species of trees</strong></td>
<td><strong>22 types</strong></td>
<td><strong>Number of treated trees</strong></td>
<td><strong>549,516</strong></td>
<td><strong>Number of locations of operations</strong></td>
<td><strong>42,317</strong></td>
</tr>
</tbody>
</table>
A high decontamination cleaning effect of the fruit tree was achieved.

Results of high pressure cleaning as a measure for decontamination of fruit trees.

<table>
<thead>
<tr>
<th>Fruit Tree</th>
<th>Before Cleaning</th>
<th>After Cleaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persimmon</td>
<td>603</td>
<td>128</td>
</tr>
<tr>
<td>Apricot</td>
<td>590</td>
<td>169</td>
</tr>
<tr>
<td>Sweet cherry</td>
<td>506</td>
<td>263</td>
</tr>
<tr>
<td>Peach</td>
<td>570</td>
<td>231</td>
</tr>
<tr>
<td>Apple</td>
<td>577</td>
<td>218</td>
</tr>
<tr>
<td>Ume plum</td>
<td>504</td>
<td>274</td>
</tr>
<tr>
<td>Grape</td>
<td>570</td>
<td>145</td>
</tr>
</tbody>
</table>

Radiation (cpm)
The distribution of highly radioactive fruit producing trees in the land (results of surface survey) 2012 survey except

Radioactive cesium concentration (pattern diagram) by tree species at different planted locations in the same orchard (21 orchards)

* The three rows on the left are the maximum concentration of one tree, the three rows on the right are the average concentration of one tree.
Cs survey on each raw material persimmon orchard in order to resume the model district

Results of the all-house survey (Yanagawa town, Date city)

- Less than 10Bq/kg
- 10-20Bq/kg
- 20-50Bq/kg
- More than 50Bq/kg
“Anpo-kaki (dried persimmons)” was developed approx. 90 years ago in the former Yanagawa town, Date city, Fukushima prefecture. Anpo-kaki is known in Japan as a special product representing Fukushima prefecture.

■ Main production areas
  - Date District (Date city, Kunimi town, Koori town)
  - Kenchu District (Sukagawa city)
  - Aizu District (Aizu-wakamatsu city, Aizu-misato city)

■ Anpo-kaki production in Date District before and after the Earthquake
Change in shipping volume by JA
(results after 1971)

*Results handled by JA Fukushima Federation of Economic Organizations (until 2002), results by JA Fukushima National Federation of Agricultural Cooperative Associations (after 2003)*
Due to the accident at TEPCO’s Fukushima Daiichi Nuclear Power Plant, anpo-kaki production in Date district was voluntarily suspended in 2013. A system to produce and supply only safe anpo-kaki has been established, by installing a process to resume the model district based on tests on raw material persimmons, development and introduction of nondestructive inspection equipment, and introduction of the Good Agricultural Practice (GAP) since 2013.

In Anpo-kaki production, there is a large variation in radioactive concentrations in raw material persimmons, and the radioactive material is concentrated by the drying process. So to provide safe raw material persimmons, an overall quantity test by nondestructive inspection equipment and the proper management of each manufacturing process by GAP is considered to be conditions for processing and shipment.
Promotion system for the revitalization of anpo-kaki production areas in 2015

- **Constituent members:** Fukushima city, Date city, Kunimi town, Koori town
  - Central Meeting JA Fukushima, JA Fukushima National Federation of Agricultural Cooperative Associations
  - JA New Fukushima, JA Date Mirai, Date Fruit Agricultural Cooperative
  - Date district Anpo-kaki Liaison Council, Fukushima prefecture Agriculture, Forestry and Fisheries Department

- **Main project description:**
  1. Introduction of nondestructive inspection equipment
  2. Hold council meetings
  3. Guidance in the production area
  4. Hold workshops
  5. Introduction and implementation, etc. of GAP

- **Bureau:** JA Fukushima National Federation of Agricultural Cooperative Association, JA Date Mirai, Fukushima Agriculture, Forestry and Fisheries Department

---

**Fukushima City Regional Agricultural Revitalization Council**

- **Constituent member:**
  - Fukushima city, JA New Fukushima, Kenpoku Forestry Office, Agriculture Promotion Office, etc.
  - Bureau: Fukushima city

- **Main project description**
  1. Radioactive material test on the fruit (detailed tests and nondestructive tests such as testing during the early period)

- **Installation of nondestructive inspection equipment:**
  - JA Date Mirai Koori testing facility

**Date City Regional Agricultural Revitalization Council**

- **Constituent member:**
  - Date city, JA Date Mirai, Date Fruit Agricultural Cooperative, Date District Anpo-kaki Liaison Council, Date Agriculture Promotion Office, etc.
  - Bureau: Date city

- **Installation of nondestructive inspection equipment:**
  - JA Date Mirai Yanagawa / Hobara testing facility

**Koori Town Regional Agricultural Revitalization Council**

- **Constituent member:**
  - Koori town, JA Date Mirai, Date Fruit Agricultural Cooperative, Date District Anpo-kaki Liaison Council, Date Agriculture Promotion Office, etc.
  - Bureau: Koori town

- **Installation of nondestructive inspection equipment:**
  - JA Date Mirai Koori / Date testing facility

**Kunimi Town Regional Agricultural Revitalization Council**

- **Constituent member:**
  - Kunimi town, JA Date Mirai, Date Fruit Agricultural Cooperative, Date District Anpo-kaki Liaison Council, Date Agriculture Promotion Office, etc.
  - Bureau: Kunimi town

- **Installation of nondestructive inspection equipment:**
  - JA Date Mirai Kunimi testing facility
Cleaning of drying sites and preparation for resumption is carried out by the team as joint operations

Everyone worked on cleaning the drying sites, and secondary pollution prevention countermeasures were carried out.

- Dust had collected in the roof and rafters and was removed with a long mop.
- The straight pipe for lateral hanging was wiped two times with a cloth to clean.
- Dirt and dust were removed by vacuum cleaner, and the floor was mopped. The dirt floor was swept with a broom, trying to avoid stirring up dust.
Course of resumption of the anpo-kaki processing model district after the nuclear accident

**Countermeasures in 2011**
- Decontamination
- ① Shaving the bark and cleaning the trees
- ② Heavy pruning (Pruning tree height)

**Countermeasures in 2012**
- 1 Identification of decontamination status of raw material persimmons
  - ① Check the raw material persimmons of all houses
  - ② Confirmation of transfer to the tree
  - ③ Confirmation of the effect of heavy pruning
  - ④ Consideration of decontamination methods of the drying site
- 2 Consideration of preparations for total inspection by nondestructive inspection equipment

**Countermeasures after 2013**
- 1 Ensuring safe raw material persimmons
  - (Determination of resumption of the processing model district)
- 2 Installation of total inspection by nondestructive inspection equipment
  - (Development of inspection equipment (only 2013) additional introduction)
- 3. Introduction of Good Agricultural Practice (GAP)
- 4. Promotion of resumption of sales, and publicizing approaches used in the production land to clients
- 5 Implementation of replacing old tree orchards and pruning

*Of the above countermeasures, 1-3 were carried out by Anpo-kaki Production Promotion Association, Fukushima Prefecture, as “Fukushima special products revitalization support project (Anpo-kaki production area revitalization project).”

Young fruit from all orchards are inspected
Approaches for the revitalization of anpo-kaki production areas

Resumption by determining model districts

since 2013 (full-voluntary suspension in 2011, 2012)

1. Ensuring safe raw material persimmons
(\textbf{full Cs analysis} of cultivated orchard/determination of resumption of processing model district)
Cs analysis during the young fruit period (July, determining the processing model district) Cs analysis before harvest (all orchards in the model district)

2. \textbf{Product total inspection by nondestructive inspection equipment}
\textit{(development / introduction of the equipment), three inspection sites}
Shipping specifications: Inspection of each “Hiratanenashigaki” 200g tray, “Hachiyagaki” 230g tray (8 trays per 1c/s).
Screening level 50Bq/kg (even if one tray exceeds the limit, the whole box is disposed)

3. \textbf{Introduction of Good Agricultural Practice (GAP)}

4. \textbf{Promotion of resumption of sales, and publicizing to a focused business market}

5. \textbf{Implementation of heavy pruning}

Anpo-kaki Restoration/Revitalization/Shipping Resumption ceremony (December 2, 2013)

Anpo-kaki nondestructive inspection status (Yanagawa testing facility)
Course of Nondestructive Anpo-kaki Inspection

A case of Anpo-kaki (8 per tray) is brought to the inspection facility.

The case (8 per tray) is placed on the inspection equipment and measured.

Each tray is tested. Trays with a value below the screening level pass.

When values exceed the screening level, the whole case (8 per tray) is disposed.

Products which pass are affixed with an inspected sticker for each tray and then shipped.
Affixing an Inspection Sticker

All anpo-kaki (trays) which have been checked by radioactive cesium nondestructive inspection equipment and showed values less than the standard value are shipped with a sticker certifying inspection by the Anpo-kaki Production Promotion Association, Fukushima Prefecture.
High-pressure washing to resume shipping

Joint high-pressure cleaning operations (December 2011 - March 2012)

Surveying a tree

Joyful images of the resumption of processing

Sequential hanging operations at the drying site

Ceremony for the resumption of the model district  December 2, 2013
Installation of nondestructive inspection equipment

(33 pieces of equipment were installed in 5 locations in the district)

12 pieces of equipment in 2013, 14 in 2014, 7 in 2015

Nondestructive inspection display (even if one tray exceeds the standard limit, the whole box is disposed)
## Total amount, total bags receiving nondestructive inspection in 2013

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Classification</th>
<th>Number of inspected trays</th>
<th>Below the minimum measurement value</th>
<th>Screening Below the level</th>
<th>Screening Exceeding the level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hachiya</td>
<td></td>
<td>659,008</td>
<td>596,534</td>
<td>61,491</td>
<td>983</td>
</tr>
<tr>
<td>Hiratanenashi</td>
<td></td>
<td>134,288</td>
<td>123,784</td>
<td>10,377</td>
<td>127</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>793,296</td>
<td>720,318</td>
<td>71,868</td>
<td>1,110</td>
</tr>
</tbody>
</table>

### Hachiya

#### Measurement value (Bq/kg)

- **10以下**
  - 381,524
- **20**
  - 191,550
- **30**
  - 85,761
- **40**
  - 24,000
- **50**
  - 5,190
- **60**
  - 819
- **70**
  - 110
- **80**
  - 41
- **90**
  - 30
- **100**
  - 86

### Hiratanenashi

#### Measurement value (Bq/kg)

- **10以下**
  - 72,807
- **20**
  - 40,843
- **30**
  - 15,858
- **40**
  - 3,874
- **50**
  - 779
- **60**
  - 52
- **70**
  - 38
- **80**
  - 9
- **90**
  - 1
- **100**
  - 11
### Total amount, total bags receiving nondestructive inspection in 2014

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Number of trays</th>
<th>Below the minimum measurement value</th>
<th>Screening Below the level</th>
<th>Screening Exceeding the level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hachiya</td>
<td>1,632,096</td>
<td>1,535,286</td>
<td>93,712</td>
<td>3,098</td>
</tr>
<tr>
<td>Hiratanenashi</td>
<td>388,904</td>
<td>375,469</td>
<td>13,385</td>
<td>50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2,021,000</td>
<td>1,910,755</td>
<td>107,097</td>
<td>3,148</td>
</tr>
</tbody>
</table>

#### Measurement value (Bq/kg)

**Hachiya**

- 1,632,096 trays

**Hiratanenashi**

- 388,904 trays

2014 Tray inspection

Below minimum measurement Value 94.5%

Above screening level 0.16%

Below the minimum measurement value 80.8%
## Total amount, total bags receiving nondestructive inspection in 2015

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Classification</th>
<th>Number of inspected trays</th>
<th>Below the minimum measurement value</th>
<th>Screening Below the level</th>
<th>Screening Exceeding the level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hachiya</td>
<td>Number of trays</td>
<td>3,179,024</td>
<td>3,014,686</td>
<td>155,295</td>
<td>9,043</td>
</tr>
<tr>
<td></td>
<td>percentage (%)</td>
<td>100%</td>
<td>94.8%</td>
<td>4.9%</td>
<td>0.284%</td>
</tr>
<tr>
<td>Hiratanenashi</td>
<td>Number of trays</td>
<td>481,440</td>
<td>471,963</td>
<td>9,299</td>
<td>178</td>
</tr>
<tr>
<td></td>
<td>percentage (%)</td>
<td>100%</td>
<td>98.0%</td>
<td>1.9%</td>
<td>0.037%</td>
</tr>
<tr>
<td>Total</td>
<td>Number of trays</td>
<td>3,660,464</td>
<td>3,486,649</td>
<td>164,594</td>
<td>9,221</td>
</tr>
<tr>
<td></td>
<td>percentage (%)</td>
<td>100%</td>
<td>95.3%</td>
<td>4.5%</td>
<td>0.25%</td>
</tr>
</tbody>
</table>

**2015 Tray inspection**

- **Hachiya**: 3,179,024 trays
- **Hiratanenashi**: 481,440 trays

### Measurement value distribution (Bq/kg)

- **Hachiya**
  - No. of trays: 3,179,024
  - Measurement value range: 0 - 2,158,894

- **Hiratanenashi**
  - No. of trays: 481,440
  - Measurement value range: 0 - 2,000,000
Challenging the revitalization of new production areas / New establishment of Anpo Koubou Mirai
Thank you for listening.