Taking Louisiana’s Backyard Plants to the World

Botanical Research Symposium
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February 25, 2014
Louisiana Rice is an Important Crop

- In 2009 rice US rice production contributed $34 billion to the US economy and created 128,000 jobs.
- Arkansas contributed $1.9 billion, California contributed $1.8 billion and Louisiana was 3rd at $640 million.
- Louisiana milling was 3rd providing $1.3 billion, creating 5,300 jobs and $746 million to the State.
Louisiana Red Beans and Rice
Rice Crops in Louisiana
Louisiana Rice Harvest
Louisiana Rice Milling and Shipping
Wright Group - Louisiana Rice Pioneers

Homeseekers, Farmers, Investors come to Southwest Louisiana. A country free from drouth and where blizzards never come.

Lands and Town Property

Call on or write us. We have large quantities of lands for sale in all portions of Acadia Parish on reasonable terms; also town property. Write us for maps and descriptive matter.

W. W. DUSON & BRO.
CROWLEY, LA.

If you have capital you wish to put out at good interest and on good security, write us.
Rice is an Important Food Throughout the World

FIGURE 1
Global dietary energy supply from rice (milled equivalent) energy/caput/day (kcal), 1961-1999
Rice Provides Women Only 2% of the Recommended Amount of Iron

<table>
<thead>
<tr>
<th>Rice&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Calcium&lt;sup&gt;b&lt;/sup&gt; (mg)</th>
<th>Iron&lt;sup&gt;b&lt;/sup&gt; (mg)</th>
<th>Thiamine (mg)</th>
<th>Riboflavin (mg)</th>
<th>Niacin (mg)</th>
<th>Zinc&lt;sup&gt;b&lt;/sup&gt; (mg)</th>
<th>Folate (mcg)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male</strong></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>White rice</td>
<td>20.9</td>
<td>1.4</td>
<td>0.1</td>
<td>0.11</td>
<td>2.8</td>
<td>2.9</td>
<td>13.9</td>
</tr>
<tr>
<td>(% RNI)</td>
<td>(2)</td>
<td>(5)</td>
<td>(12)</td>
<td>(9)</td>
<td>(17)</td>
<td>(21)</td>
<td>(3)</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>White rice</td>
<td>17.4</td>
<td><strong>1.16</strong></td>
<td>0.1</td>
<td>0.1</td>
<td>2.32</td>
<td>2.4</td>
<td>11.6</td>
</tr>
<tr>
<td>(% RNI)</td>
<td>(1.7)</td>
<td>(2)</td>
<td>(10.5)</td>
<td>(7)</td>
<td>(17)</td>
<td>(12)</td>
<td>(3)</td>
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</table>
African Countries with a Rice-Based Diet and GNP per Capita

- Gabon - $3,350
- Ivory Coast - $710
- Gambia - $340
- Liberia - $490
- Senagal - $510
- Sierra Leone - $130

These countries are poor, meat is scarce and iron deficiency common.
Why is Low Iron a Problem?

• 51% of people in Sub-Sharan Africa (763 million) live on less than $1.25 per day.
• Over 30% of the world is iron deficient
• Iron deficiency is responsible for 20% of maternal deaths
• Iron deficiency in children leads to premature birth, low birth weight, infections, physical and intellectual impairment and poor school performance
What is the Solution?

• One cannot afford iron pills on an income of less than $1.25 per day and taking pills is not a part of the culture.
• The Wright Group developed a rinse for rice that adds enough iron to prevent iron deficiency without changing the taste.
• Dr. Losso studied the effect of the rinse on rice.
• A study in iron deficient women was done at Pennington.
Dr. Losso’s LSU Ag-Center Testing

- Dr. Losso took the rice treated with the rinse or spray containing iron and tested it.
- He cooked, rinsed and cooked, cooked with extra water, soaked and cooked with extra water. The rice retained more than 76% of the iron after cooking in all these ways.
- Iron-supplemented rice dishes with ¾ cup of cooked rice were prepared at Pennington and frozen.
Iron Deficiency Anemia

• The red pigment in blood is hemoglobin.
• Hemoglobin carries oxygen to the tissues
• Hemoglobin contains iron
• Without enough iron in the diet the body cannot make hemoglobin and red blood cells.
• Women lose blood and iron monthly with menses and have more anemia than men.
• Iron deficiency anemia causes fatigue
A Test for Anemia
A Test for Hemoglobin
Testing Iron-Supplemented Rice in Women with Iron-deficient Anemia

• 11 women with menstrual periods who were anemic with low iron values were included.
• Women who were pregnant, nursing or taking iron supplements were excluded
• All women heated and ate 2 rice dishes a day for 2 weeks prepared at Pennington. Hemoglobin was tested at the beginning and end of the two weeks. 4 women had regular rice dishes and 7 had iron-rice dishes
Hemoglobin Results in Women Eating Iron-Supplement Rice Dishes

• The regular rice contained 2 mg of iron, but the iron-supplemented rice contained 18mg of iron (the amount recommended for women)
• In only 2-weeks the hemoglobin rose by 0.74 grams (normal for women is 12-16 grams). This was statistically significant (p<0.02) even with small numbers. The percentage of red blood cells in the blood also increased
What Are the Next Steps?

• We have shown that iron-supplemented rice can treat iron deficiency anemia and the rice still tastes the same. The cost of the rinse is very low (pennies).

• A grant is being sought to use the rice in an African country that has a rice-based diet.

• An community given iron-supplemented rice will be compared to one eating regular rice to confirm that anemia in Africa improves too.
Hopes for the Future

• We hope and believe that iron-supplemented Louisiana rice will improve the fatigue experienced by women with iron deficiency in Africa.

• We anticipate this will reduce maternal deaths with childbirth and improve infant survival

• It should also improve the growth and brain development in the children and improve school performance.
It Will Help Louisiana Too

- Africa and potentially other countries that have a rice-based diet could benefit from Louisiana iron-supplemented rice.
- This will increase demand and expand markets for rice from Louisiana and help to stimulate the economy of the State.
- This predicts greater exports, more jobs, and greater income to the State with the potential to reduce the need for individual taxation.
Iron Supplemented Louisiana Rice

Premature babies with iron deficiency

Healthy and happy child
The Promise of Louisiana Rice

To Dawning of new health in Africa

From Louisiana’s Backyard