

*History of the  
United States  
Standards for Rice*

Prepared by Vicki Lacefield  
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# **The History of the U.S. Rice Standards**

## **INTRODUCTION**

The United States standards for rice evolved with the development of the rice industry in the United States. The standards facilitate the marketing of rice in foreign and domestic trade, and provide a uniform measure of quality. Because the majority of rice is consumed as cooked rice, the grading of rice has always been highly subjective with many factors based on their effect on the general appearance of the sample. Much of the early work in developing U.S. Rice Standards is still very much a part of the standards today. The history of the rice standards is important in understanding the basis of the present U.S. Rice Standards.

## **THE BEGINNING OF RICE PRODUCTION IN THE UNITED STATES**

During the early production of rice on plantations in North Carolina, Georgia, and Florida, rice was toll milled. The grower paid for the milling and retained the rice to feed the slave labor which made production possible. As production increased, surplus crops were marketed to wholesale merchants who negotiated the price based on the appearance of a sample from the lot.

As rice production moved to Louisiana, Texas, and Arkansas, growers found the system of toll milling to be unsatisfactory for the efficient handling, milling, and distribution of the greatly increased production. At this time, the present system of marketing rice in the rough by the producer was begun; and simultaneously, the question of grade or quality of the rice became very important.

As rice production prospered, many small rice mills were built close to the rice areas. Growers marketed their rice by delivering their rice in bulk or bags to the mill. Growers preferred to sell their rice ungraded by sample at the best “round” price they could find. The term “round lot” was coined, meaning, just as it is delivered without any further grading, including the poor as well as the good rice.

This put the matter of determining the quality of rice delivered entirely on the miller. He had to consider the milling quality, the yield of the rough rice, and the price he could obtain for the milled rice. In deciding the price he could offer, the miller was also suspicious that the sample did not truly represent the lot of rice. With this in mind, the miller often would figure in a safety margin in making his price offer. Growers were also highly suspicious of the millers, feeling that they weren't fairly paid for their crop and that the millers took advantage of their position.

### **SOUTHERN RICE GROWERS ASSOCIATION**

As a result, grower and dealer organizations were formed. The largest of these organizations was the Southern Rice Growers Association (Association) formed in 1911. The Association hired rice experts and asked for the establishment of uniform grades. The Association acted as a broker for the grower's rice. An agent sampled the rice in the field, gave a grade to each lot, and determined the comparative net price it should bring. The rice was then sold by the Association on the basis of a representative sample.

Buyers from the rice mills would congregate at the Association office to review the samples and bid on lots of rice. The highest bidder above the minimum price set by the Association was awarded the lot of rice. The Association agent would withdraw any lot from sale if the highest bid was less than the value set on the rice. During the marketing season of 1916, it is estimated that 70 percent of the rice grown in the South and in California was sold through the Southern Rice Growers Association.

The grades established by the Association were very simple. They provided a minimum standard weight per bushel for three types of rice: Honduras, Blue Rose, and Japan. The grades were determined by the percentage of red rice found in the sample – a No. 1 grade allowed 0.25 percent, while a No. 6 grade allowed up to 50 percent. No other grading factors were established other than red

rice, but the agent was advised to use his judgement in fixing a fair price.

Due to the lack of well defined grades, many disputes arose over the quality and price of certain lots by both growers and millers. A better system of grading was desired by everyone involved, and many unsuccessful attempts were made to further define the standards.

## **ESTABLISHMENT OF THE STANDARDS**

In 1906, an Appropriations Bill was passed which included funding for the U.S. Department of Agriculture to investigate the production and marketing of grain and to develop workable grade standards. During the course of the grain investigations, a rice investigation office was set up in New Orleans to research grade standards for rough rice, milled rice, and brown rice. W. D. Smith was placed in charge of the rice investigation under the direction of E. G. Boerner, who headed the grain investigations. For several years, rice samples were collected from farms, rice mills, warehouses, and socks. These samples were analyzed for factors which affected the quality of the rice.

In 1918, the first USDA **milled rice standards** were recommended to the rice trade and adopted by the U.S. Food Administration for government purchases of rice during World War I. The standards contained six classes of rice: Honduras, Blue Rose, Japan, Honduras second heads, screenings, and mixed rice. The class names, Honduras, Blue Rose, and Japan were used because they were commercial names for long, medium, and short grain rice varieties. The standards were praised by the industry for their well-defined grade factors, but were only adopted in part by the grower and dealer organizations and exchanges.

The rice investigation by W.D. Smith continued, and in 1920, the milled rice standards were revised and recommended to the industry for their voluntary usage. During the development of the revised standards, hearing were held with the rice growers and millers, and revisions were made in the standards to reflect the opinions of the rice industry. The original proposed standards defined the

classes of milled rice as long, medium, and short grain rice. The trade groups objected to these designations because the term medium had previously been used to designate a rice of “medium” inferior quality. It was recommended that the class names be changed to long, short, and round, and the 1920 standards were published as such.

The 1920 milled rice standards used both numerical grades and trade terms to designate each grade of rice. The terms Extra Fancy, Fancy, Choice, and Medium were used with No. 1, 2, 3, and 4 respectively.

### **PERMISSIVE RICE STANDARDS**

It is interesting to note that when these revised milled rice standards were proposed, they were intended to be included under the United States Grain Standards Act (USGSA). However, due to the objections by the trade and the level of production in 1920, the standards were recommended as permissive (voluntary) standards and not mandatory, as they would have been under the USGSA.

The 1920 milled rice standards were well received by the industry. The Houston Merchant’s Exchange, the New Orleans Sugar Exchange, and the New Orleans Board of Trade adopted the USDA standards for trading purposes. The standards were also used by the Association and in part by the Rice Millers’ Association (RMA) which at that time was a brokership and inspection agency for the millers.

### **THE RICE MILLERS ASSOCIATION (RMA)**

In 1921, the Association disbanded, making the RMA the major inspection service available in New Orleans. Mr. F. B. Wise, Secretary-Treasurer of the RMA, performed the inspection of rice for the New Orleans Board of Trade. RMA utilized the USDA grades and factors, but certified the classes of rice by the variety of the rice rather than long, short, or round.

In 1923, further refinement of the milled rice standards was made. The factor of whole kernels was deleted because it appeared repetitious to show both whole and broken kernels as grading factors. Definitions for "weevily", and "coated" rice were included along with other minor revisions.

In 1923, the first **rough rice standards** were also recommended for voluntary use. The rough rice standards were patterned after the milled rice standards with the classes of long, short, and round grain rice. The numerical grades of No. 1 through 6, and sample grades were also used. The rough rice standards were designed so that a miller could buy No. 1 rough rice and be able to obtain a No. 1 milled rice, although this would not prove to be true in all cases.

In 1927, due to the insistence of Mr. Wise of the Rice Millers' Association and support by the rice industry, the milled rice and rough rice standards were revised to designate the classes of rice by varietal names. The rice industry had been trading rice by the name of the variety for years. Although USDA grades had been used extensively, the trade preferred to use varietal names rather than classes. The only exception to the use of varietal names was for Japan rice, where in both California and the South, all the round grain varieties of rice were called simply, Japan.

The first **brown rice standards** also were issued in 1927 with the classes being designated by variety names. Establishment of standards for brown rice was slowed prior to this time due to the lack of a definite market. By 1927, foreign demand for brown rice had grown, and millers and traders saw the need for brown rice standards. Four grades of brown rice were developed: Extra Fancy, Fancy, Choice, and Sample Grade.

The system of using varieties to describe rice classes in rough rice, milled rice, and brown rice worked well in the period from 1927 to the 1968. The rice industry was satisfied with the method, and thought this was the best way to describe the rices grown in different states.

Many revisions were made in all three rice standards from 1927 to the 1960's. Most of the

revisions were made to add classes of rice for newly developed varieties. Other revisions were made to allow for rice equipment developed by the rice investigation office. Although most of the grading factors remained the same during this period, several factors and special grades were added, such as chalky kernels and parboiled.

## **BREAKDOWN OF CLASSIFICATION BY VARIETIES**

During the 1960's, however, the system of classification by varieties began to break down. Varieties became difficult to identify and varied drastically in their cooking and processing qualities. Long grain varieties, such as Century Patna 231 and Toro, cooked like medium grain; while Early Prolific, a medium grain variety, cooked more like a long grain variety. Efforts were made to develop an inspection test to distinguish the difference in cooking characteristics between similar appearing varieties. The alkali spreading value test was used for this purpose. The test worked very well, but took approximately 11 hours to perform. The problems persisted, and the USDA inspection service and the rice standards were heavily criticized by the rice industry.

The problem with non-typical cooking varieties was eventually solved through the work of the USDA Rice Extension Laboratories in Beaumont, Texas, and Crowley, Louisiana. Rice varieties that had similar characteristics were tested and developed. The varieties Century Patna, Toro, and Early Prolific were not recommended because their cooking characteristics were atypical to their rice type. They were then grown only for specialized markets.

## **INTRODUCTION OF THE THREE CLASSES**

In 1968, the rice standards were amended to designate three classes of rice for rough rice, brown rice, and milled rice. These classes were Long grain, Medium grain, and Short grain. The system, based on the length to width ratio of the kernels, eliminated most problems in determining the

class of rice.

As shown in the attached document, major revisions were also made to the rice standards in the 1960's, 1970's, and 1980's. Also some changes in the and 1990's, and early 2000's.

Today, the standards for rice appear to be working well in the marketing of rice. However, improvements are still needed to bring uniformity between rice inspectors and to update rice inspection equipment.



**Amendments and Revisions to the:  
U.S. Standards for Rough Rice;  
U.S. Standards for Brown Rice for Processing; and  
U.S. Standards for Milled Rice**

( For more information on specific documents contact Vicki Lacefield @202-720-0397.)

September 1918	Established standards for Milled Rice
October 1918	Issued Instructions for Sampling, Handling, Analyzing, and Grading of Samples of Milled Rice
January 1927	Issued Handbook of U.S. Grades for Milled Rice
October 1927	Issued Standards for Milled Rice, Brown Rice, and Rough Rice.
January 1928	Issued Handbook of Official Standards for Milled Rice, Brown Rice, and Rough Rice.
September 1929	Amended Rough Rice Standards: <ol style="list-style-type: none"><li>1. Changed definition of rough rice.</li><li>2. Amended grade requirements for certain classes.</li><li>3. Added grades for slightly chalky, chalky, and very chalky rough rice.</li></ol>
April 1932	Amended Rough Rice Standards to provide for the grade requirements for milling quality.
July 1933	Amended Rough Rice Standards: <ol style="list-style-type: none"><li>1. Revised classes of rough rice.</li><li>2. Revised grade requirements.</li><li>3. Revised the grades for damp, seedy, muddy, and chalky rice.</li><li>4. Revised grades of milling quality.</li></ol>
August 1934	Issued Revised Standards for Rough Rice (Reprint to include update of previous revisions).
November 1934	Amended Rough Rice Standards: <ol style="list-style-type: none"><li>1. Revised grade requirements for subclass Calif-Japan variety.</li><li>2. Revised definition of basis of determination.</li></ol>
August 1936	Amended Rough Rice Standards – Added additional classes.
August 1937	Amended Milled Rice Standards – Prescribed air oven for determining percent of moisture.
May 1938	Amended rough Rice Standards – Incorporated basis of grade determination (Southern Rice) and revisions of Special Grades.

December 1941	Amended Rough Rice Standards – Added “Zenith” to class designations.
May 1942	Amended Rough Rice, Brown Rice, and Milled Rice Standards – Primarily revised listing of classes of rice.
June 1943	Amended Milled Rice Standards – Provide definition and grades for parboiled milled rice.
March 1944	Amended Milled Rice Standards: <ol style="list-style-type: none"> <li>1. Revised definition of milled rice.</li> <li>2. Added definition of unpolished milled rice.</li> <li>3. Revised definition of broken kernels.</li> </ol>
November 1945	Amended Milled Rice Standards – Reissue of previous standards.
December 1948	Promulgated regulation for the inspection and certification of rice and other agricultural commodities under the AMA of 1946 and the so-called Farm Products Inspection Act.
July 1951	Amended Rough Rice, Brown Rice, and Milled Rice Standards – Basically combined three separate publications into one.
May 1952	Amended Rough Rice, Brown Rice, and Milled rice Standards – Provided special grade requirements for unpolished milled rice.
August 1959	Amended Rough Rice, Brown Rice, and Milled Rice Standards: <ol style="list-style-type: none"> <li>1. Provides for use of sizing plates and sieves in determining head rice and total milled rice in rough and brown rice standards, and in determination of second heads and screening in milled rice standards.</li> <li>2. Changes to clarify and simplify existing standards.</li> </ol>
August 1961	Amended Rough Rice, Brown Rice, and Milled Rice Standards: <ol style="list-style-type: none"> <li>1. Revised class names to indicate varieties currently grown.</li> <li>2. Limitation of not more than 10 percent of contrasting rice in one class of rice.</li> <li>3. Parboiled rice kernels present in nonparboiled rice to be considered same as damaged or heat-damaged kernels.</li> <li>4. Provides special grades for parboiled rough rice, parboiled brown rice, and granulated brewers milled rice.</li> <li>5. Provides for determining milling yield of broken brown rice.</li> <li>6. Includes definition for certain sieves and inclusion of certain factors in tables of grade requirements.</li> </ol>

- December 1965 Amended Milled Rice Standards:
1. Subdivided the milling requirement "reasonably well milled" into three degrees of milling; reasonably well milled, lightly milled, and loosely milled.
  2. Milling requirement for all classes of milled rice should be based on physical samples of milled rice prepared by the Consumer and Marketing Service.
- January 1966 Amended Milled Rice Standards:
1. Redefined "Milled Rice".
  2. Provided for Grain Division to prepare and maintain samples illustrating degree of milling.
- January 1968 Amended Rough Rice, Brown Rice, and Milled Rice Standards:
1. Established a new system of establishing classes of rice on basis of kernel size and shape instead of on basis of variety.
  2. Established paddy kernels as grading factor in brown rice.
  3. Reduced maximum moisture content of milled rice to 14 percent.
  4. Mechanical sizing augmented by handpicking.
  5. Sets uniform amounts of chalky kernels in rough and milled, short and medium-grain rice.
  6. Reduced number of heat-damaged kernels and objectionable seeds in U.S. No. 5 rough and milled rice.
  7. Required grade certification for rough rice large broken kernels.
  8. Increased maximum limits for red rice and damaged kernels in U.S. 3 and 4 rough and milled rice.
- January 1968 Amended Milled Rice Standards – Reinstated 15 percent moisture for Sample Grade.
- May 1968 Amended Milled Rice Standards – Change in degrees of milling, added extra well milled.
- June 1968 Amended Rough Rice, Brown Rice, and Milled Rice Standards – Primarily updated handbook.
- February 1969 Amended Rough Rice Standards – Provides for analysis of large broken kernels for 1 or more factors only upon request.
- July 1972 Amended Rough Rice, Brown Rice, and Milled Rice Standards:
1. Deleted term "head rice" and define milling yield as "whole kernels and total milled rice" in Brown Rice Standards.
  2. Provide for scoring "smutty" in rough and Brown Rice Standards.
  3. Change Brown Rice Standards to Brown Rice of Processing.
  4. Raise moisture limit for Brown Rice to 14.5 percent.
  5. Determine special grade Parboiled Brown Rice and Factors: kernels damaged by heat, parboiled kernels in nonparboiled rice, and heat-damaged

	<p>kernels on basis of brown rice after milling.</p> <ol style="list-style-type: none"> <li>6. Add new term “types of rice”.</li> <li>7. Determine types of broken kernels on basis of width, thickness, and shape.</li> <li>8. Raise maximum limit for chalky kernels in U.S. 1 and 2 second head milled rice.</li> <li>9. Set maximum limit of 3 percent of damaged kernels for U.S. 1-4 Screenings and Brewers Milled Rice.</li> <li>10. Set maximum limit of 1 percent of material passing through No. 30 sieve for U.S. 1-4 Screenings and Brewers Milled Rice.</li> </ol>
July 1973	GR Notice extending time for special certification of rice.
June 1974*	Redesignated the Rice Inspection Manual as Inspection Handbook HB 918-11.
June 1975*	<p>Amended Rough Rice Standards:</p> <ol style="list-style-type: none"> <li>1. Provided for determining certain quality factors and defects on the basis of whole and large broken kernels.</li> <li>2. Changed the cleaning procedure used before the grading sample is hulled and milled.</li> <li>3. Increased allowance for seeds and heat-damaged kernels in U.S. No. 1-5 grades of rough rice.</li> </ol>
July 1975	Amended Milled Rice Standards - Established one interpretative line sample for degree of milling for medium-grain rice regardless of area of production.
August 1975	Correction to above FR.
August 1977	<p>Amended Rough Rice, Brown Rice, and Milled Rice Standards:</p> <ol style="list-style-type: none"> <li>1. Established “Two or better” certification in all three types of rice (Option 1 and 2).</li> <li>2. Deleted whole and brokens of other types as grading factor for U.S. No. 5 and No. 6 Milled Rice Standards.</li> <li>3. Deleted total broken kernels as grading factor in Brown Rice for processing.</li> <li>4. Made editorial changes to remove redundancy and provide clarity.</li> </ol>
December 1977	Correction to above FR.
January 1980	<p>Amended Brown and Milled Rice Standards:</p> <p>Redefined the term "paddy kernels" in Brown and Milled Rice.</p>
July 1980	Suspended the portion of the definition of milled rice which requires that a part of the germ be removed from the kernels, to provide time to study the effects of changing the definition. Suspension will expire on July 31, 1981.
July 1981	Emergency final rule to extend the suspension action beyond July 1981.

August 1982	Amended references in certain sections of regs to reflect organizational structure changes and responsibility. (transfer of responsibility from AMS to FGIS)
July 1983	Amended Milled Rice Standards: <ol style="list-style-type: none"> <li>1. Revised the definition of milled rice to delete "and part of the germ".</li> <li>2. Revised the definition of coated milled rice to delete the restriction of "coated with glucose and talc".</li> </ol>
April 1988	Rewrote and reorganized Subpart A of the Part 68 regulations.
July 1989	Revised Rough Rice Standards: <ol style="list-style-type: none"> <li>1. Added a separate category for heat-damaged kernels.</li> <li>2. Redefined the special grade "weevily" to "infested".</li> </ol> Revised Rough Rice, Brown Rice, and Milled Rice <ol style="list-style-type: none"> <li>1. Incorporating the insect infestation tolerances</li> <li>2. Revised the rounding procedures</li> <li>3. Eliminated footnotes and references to footnotes</li> <li>4. Other miscellaneous changes.</li> </ol>
December 1989	Corrections to above FR
December 1991	Amended Rough Rice, Brown Rice, and Milled Rice Standards: <ol style="list-style-type: none"> <li>1. Changed "sweet rice" to "glutinous rice"</li> <li>2. Deleted proposed establishment of a subclass for short grain sweet rice</li> <li>3. Established a special grade for glutinous rough, brown and milled.</li> <li>4. Defined glutinous</li> <li>5. Excluded "chalky kernels" factor from glutinous.</li> </ol>
December 1993	Amended Rough, Brown, and Milled Rice Standards: <ol style="list-style-type: none"> <li>1. Established special grade for aromatic</li> <li>2. Increase limits for BK removed by 5P in U.S.#1,2</li> <li>3. Eliminated class SCMR</li> <li>4. Revised definitions of classes of RR</li> <li>5. Revised definitions of classes of SH, SC, and BRMR</li> </ol>
May 1994	Confirmation of regulations, no changes.
October 2002	Direct Final Rule - Revised Milled Rice Standards: <ol style="list-style-type: none"> <li>1. Added hard milled milling degree</li> <li>2. Eliminated lightly milled</li> </ol>
September 2002	Correction to October 2002, corrected as to dates effective.