

# M-402



M-402 is a late maturing premium quality medium grain released in 1999. It has a smaller kernel than M-401 and grains are more translucent and give higher milling yields. Its pedigree is: *Kokuhorose/4/M7\*2/M9//M7/3/M-401/Kokuhorose.*

**U.S. MARKET TYPE:**  
**MEDIUM GRAIN**

2000      2001      2002

**Grain Dimensions (Paddy)**

Average Length (mm) . . . . .	8.42	8.27	8.27
Average Width (mm) . . . . .	3.01	2.97	3.04
L/W Ratio . . . . .	2.8	2.8	2.7

**Grain Dimensions (Brown)**

Average Length (mm) . . . . .	6.19	6.17	6.09
Average Width (mm) . . . . .	2.69	2.66	2.75
L/W Ratio . . . . .	2.3	2.3	2.2
1000 Grain Weight (g) . . . . .	22.8	22.8	21.8

**Grain Dimensions (Milled)**

Average Length (mm) . . . . .	5.88	5.81	5.73
Average Width (mm) . . . . .	2.63	2.58	2.63
L/W Ratio . . . . .	2.2	2.2	2.2
Apparent Amylose (%) . . . . .	18.3	17.7	16.5

**Protein (%)**

Brown . . . . .	6.8	6.9	5.8
Milled . . . . .	6.0	5.8	5.6

Alkali Spreading Value (1.5% KOH) . . . . . 6.9 . . . . . 6.0 . . . . . 6.0

Alkali Spreading Value (1.7% KOH) . . . . . 7.0 . . . . . 7.0 . . . . . 6.9

Cooking Time (min) . . . . . 15.7 . . . . . 16.7 . . . . . 18.4

**Differential Scanning Calorimetry**

Gelatinization Temperature (°C) . . . . . 65.0 . . . . . 66.7 . . . . . 67.4

**QUALITY TYPE:**

**PREMIUM MEDIUM GRAIN**      2000      2001      2002

**Rapid Visco Analyzer**

*AACC Method:*

Peak . . . . .	234	269	233
Hot Paste . . . . .	120	131	117
Cool Paste . . . . .	214	226	203
Setback . . . . .	-20	-43	-30
Consistency . . . . .	94	95	86
Breakdown . . . . .	114	138	116
Pasting Temperature (°C) . . . . .	69.0	70.2	69.9

*Japanese Method:*

Peak . . . . .	271	304	240
Hot Paste . . . . .	114	116	97
Cool Paste . . . . .	214	217	184
Setback . . . . .	-58	-86	-57
Consistency . . . . .	99	102	87
Breakdown . . . . .	157	188	143
Pasting Temperature (°C) . . . . .	68.6	69.3	71.6

**Controlled Stress Rheometer (Pa.s)**

Peak . . . . .	0.37	0.59	0.40
Hot Paste . . . . .	0.22	0.31	0.24
Cool Paste . . . . .	0.47	0.66	0.51
Setback . . . . .	0.10	0.08	0.11
Consistency . . . . .	0.25	0.36	0.27
Breakdown . . . . .	0.15	0.29	0.16
Pasting Temperature (°C) . . . . .	64.9	66.3	67.0



*Physiochemical testing provided by: the USDA-ARS Rice End-Use Quality Research Laboratory, Rice Experiment Station, and Department of Food Science and Technology, U.C. Davis. • Samples grown and processed at the Rice Experiment Station. • Research supported in-part by a grant from the California Rice Commission.*