

NOTE

Milling and Baking Qualities of Ten Spring Wheat Cultivars from the People's Republic of China

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Little is known about the milling and baking quality of Chinese wheat. Pomeranz (1977) stated that Chinese breeding programs emphasize yield and maturity rather than quality. One objective in China's program has been to increase kernel size, which can result in increased flour yield. According to Pomeranz (1977), Chinese wheat flour is used in three main food products: 1) yeast-leavened

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baked or steamed (mantou) foods, 2) noodles, and 3) miscellaneous—ravioli, dumplings, pancakes, cakes, cookies, etc.

This study reports the milling and baking qualities of 10 spring wheat cultivars from Heilungkiang province of the People's Republic of China.

MATERIALS AND METHODS

Ten Chinese spring wheats and the Canadian hard red spring wheat cultivar Neepawa were grown at Portage la Prairie, Manitoba, in 1979. Grain samples (500-g) were subjected to quality tests, of which most were described previously (Baker and

TABLE I
Quality Measurements of One Canadian and Ten Chinese Wheat Cultivars

Cultivar	Grinding Time (min)	Flour Protein* (%)	Flour Yield (%)	1,000-Kernel Weight (g)	Mixograph Development Time (min)	Farinograph Absorption (%)	Remix Loaf Volume (cm ³)	Falling Number (min)
Ke Heng No. 7	0.62	13.3	73.4	41.5	1.4	57.4	580	240
Ke Feng No. 1	0.42	13.1	73.2	39.3	1.5	62.8	735	130
Ke Chuan	1.20	13.0	67.2	40.7	1.2	57.2	600	187
Ken No. 149	0.50	13.5	73.9	43.6	2.3	60.6	885	150
Hsin Shu Kuang No. 1	0.70	15.0	72.4	50.6	1.5	59.0	775	194
Hsin Shu Kuang No. 3	0.62	14.8	72.9	44.2	2.5	58.4	885	130
Ke Han No. 6	0.45	13.9	73.3	44.9	1.0	62.4	585	277
Pei Hsin No. 4	0.55	14.8	75.4	44.8	1.3	60.8	760	304
Ho Chun No. 12	1.10	12.3	71.1	32.1	1.0	56.4	615	130
Hsin Shu Kuang No. 9	0.66	14.1	75.9	38.8	1.2	62.2	830	127
Neepawa	0.64	16.3	71.7	37.1	1.7	63.2	1,050	148

*14% mb.

Kosmolak 1977). The two soft wheats, Ke Chuan and Ho Chun No. 12, were tempered to 14.0% moisture and the hard wheats to 15.5%. Grain color was determined by a method based on sodium hydroxide (Kimber 1971). Falling number values were determined on samples treated with a rain simulator (Noll and Czarnecki 1980) according to AACC method 56-81B (1972).

RESULTS AND DISCUSSION

The grain of cultivars Ke Chuan, Hsin Shu Kuang No. 1, and Ho Chun No. 12 were white; Ke Heng No. 7 was a mixture of red and white; and the remaining six cultivars were red. The results of the quality tests are presented in Table I.

Cultivars Ke Chuan and Ho Chun No. 12 had soft kernels, as evidenced by the long grinding time. However, the flour yield of the latter cultivar was good considering its long grinding time. Flour yields were generally higher than that of Neepawa and may reflect the larger kernel size suggested by Pomeranz (1977). All Chinese cultivars had a lower protein content than did Neepawa. Cultivars Ken No. 149 and Hsin Shu Kuang No. 3 had longer mixograph development times than did Neepawa. The others had shorter development times, indicating weak doughs. All cultivars from the People's Republic of China had a lower farinograph absorption than Neepawa did, which may be because of their lower protein content. Among the Chinese cultivars, Ken No. 149, Hsin Shu Kuang No. 3, and Hsin Shu Kuang No. 9 gave high loaf volumes, although all were much lower than that of Neepawa. Although Ke Han No. 6 has both good protein and high absorption, it had a low loaf volume, which may be due to its short development time.

According to information from China, cultivars Ke Heng No. 7, Ke Chuan, and Pei Hsin No. 4 are reputed to have tolerance to sprouting at maturity, with the latter cultivar being the most

tolerant. These three cultivars were among six that had a higher falling number than Neepawa did. The high values suggest that these cultivars warrant further investigation, although they did not have falling number values as high as that of Columbus (B.W. 37), a recently licensed Canadian cultivar "with resistance to sprouting" (Noll and Czarnecki 1980).

Because the assessment of these wheats is biased towards Canadian standards, the fact that they appear low in quality as expressed in lower protein contents and weaker dough strengths is not surprising. However, their quality probably satisfies the end-product requirements for the People's Republic of China.

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