REGISTRATION OF CROP CULTIVARS

About 50 family blocks, each composed of nearly 100 panicle rows, were grown in 1982 for further purification and to prepare breeder seed of Newbonnet. Several of the family blocks were discarded in the field and all others were harvested individually. After carefully checking the grain and quality characteristics and disease reaction notes, about 25 phenotypically similar families were bulked for production of further purified breeder and foundation seed in 1983 and 1984.

Newbonnet was compared to Starbonnet in 29 replicated tests in Arkansas over the past 5 years. In these tests, Newbonnet averaged 9 days earlier in heading, 15 cm (6 inches) shorter in plant height and at least equally resistant to lodging, about 8% heavier in individual milled kernel weight, equally high in milling yields, and 12% higher grain (rough rice) yield. Milam and Bradshaw (1983) reported that grain yields of Newbonnet averaged 6390 kg ha\(^{-1}\) compared to 5890 kg ha\(^{-1}\) for Starbonnet at the same five test locations in Mississippi in 1982. Brandon et al. (1982) reported that in a 9-treatment N-fertilizer test at Crowley, La. Newbonnet produced an overall average grain yield of 7246 kg ha\(^{-1}\) compared to 6530 kg ha\(^{-1}\) for Starbonnet. Maximum average yields for a single treatment were 9722 kg ha\(^{-1}\) for Newbonnet and 7806 kg ha\(^{-1}\) for Starbonnet. In a similar test in East Carroll Parish, 9-treatment averages were 9173 kg ha\(^{-1}\) and 8053 kg ha\(^{-1}\) and maximum single-treatment means were 10 035 kg ha\(^{-1}\) and 9117 kg ha\(^{-1}\) for Newbonnet and Starbonnet, respectively. As an average over all locations of the Cooperative Regional Uniform Rice Nursery for the period 1979-1982, Newbonnet, with a yield of 6350 kg ha\(^{-1}\) produced 18% more grain than Starbonnet in the same tests. Whole kernel (head rice) milling yields for the two cultivars were very similar.

Plants of Newbonnet are darker green and the leaves are narrower and more erect than those of Starbonnet. The two cultivars are similar in reactions to the common rice diseases except that Newbonnet has somewhat more resistance to the prevalent races of the blast disease fungus. Typical Newbonnet plants, like those of Starbonnet, have purple apiculi and stigmas and glabrous, straw-colored hulls. Individual grain and kernel dimensions for Newbonnet and Starbonnet, respectively, averaged as follows: for rough rice—length, 3.4 and 3.1 mm; width, 2.5 and 2.5; length/ width ratio, 8.8 and 6.2; and thickness, 1.9 and 1.4. Corresponding measurements for brown rice averaged: length, 3.5 and 3.3; and thickness, 1.6 and 1.4. For milled rice the averages were: length, 7.2 and 6.9; width, 2.1 and 2.1; length/width ratio, 3.5 and 3.3; and thickness, 1.7 and 1.6. Average weights in milligrams per individual grain or kernel for Newbonnet and Starbonnet, respectively, were: rough rice, 23.5 and 20.9; brown rice, 18.9 and 16.9; and milled rice, 18.4 and 15.9. Compared to 'Lebonnet' (Bollich et al., 1975), weights of rough, brown, and milled kernels, respectively, averaged 23.3, 18.9, and 18.4 mg for Newbonnet and 25.7, 21.0, and 19.3 mg for Lebonnet. These values indicate that Newbonnet grains and kernels are considerably larger than those of Starbonnet. The larger grain size is preferred for the parboiled rice market.

Kernels of Newbonnet are nonglutinous, nonaromatic, semiaromatic, and usually free of chalk. The pericarp is light brown. Results from the Cooperative Regional Rice Quality Laboratory at Beaumont, Tex. (B.D. Webb, unpublished) indicate that Newbonnet has cooking and processing quality characteristics typical of U.S. long-grain cultivars as described by Webb et al. (1972).