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lower in 28 trials) and has marginally weaker dough properties. Baking tests have shown it to produce loaves of similar volume and overall quality to Madden. Gutha is considered to be of good quality for Australian Hard grade.

Yield

Gutha has been tested in comparison with Madden and Wialki in 85 and 47 trials respectively during the period 1978 to 1981. It is a hard wheat intended for release only in areas serviced by group A receival points. In these areas it outyields Madden by 2 to 15%. It is outyielded by Wialki (by 2%) in the north-central low rainfall area, but in other hard wheat areas it outyields Wialki by 8 to 15%.

It has been approved for release as a rust-resistant replacement for Madden and Wialki in the rust-labile, northern, medium and low rainfall areas. Release has also been approved as a replacement for others recommended A. Hard varieties in the same areas and also for all recommended A. Hard varieties in the central low rainfall area.

Disease reaction

Gutha is resistant to stem rust (except in the field), moderately resistant to or moderately susceptible to stripe rust, and susceptible to leaf rust, flag-smut, bunt and septoria. It has the possible genotype *Sr13* + *Sr8*(?) for stem rust. Dr R. A. McIntosh, the University of Sydney, has reported that lines with *Sr13* often give higher than expected field responses. The rust testing was carried out by the University of Sydney as part of the National Rust Control Program. Additional stripe rust testing was carried out by the Victorian Department of Agriculture.

Breeding: The final cross was made in 1972. The first two generations were grown in glasshouses at South Perth, then planted at Wongan Hills in 1973. Yield testing commenced in 1976, quality testing a year later on a sample from the initial yield test.

Breeders: J. Reeves and staff in cooperation with H. M. Fisher and G. B. Crosbie (W. A. Department of Agriculture), also the Bread Research Institute (Sydney) and the University of Sydney.

Finance

The program is supported by the State Wheat Industry Research Committee.

J. Reeves

Hyden

Accepted for registration 21 December 1982

Parentage: Gamanya/Inia

Hyden is quick maturing. The straw is normally strong and short, about 8 cm shorter than Gamanya. The head is white, tapering and bearded and the grain is soft.

Quality

Hyden is a soft wheat with better hectolitre weight, slightly higher protein content and better milling quality than Gamanya. Although similar in grain hardness, flour water absorption is slightly lower. It has slightly stronger dough properties and similar extensibility. Baking tests have shown Hyden to yield slightly larger loaves, having slightly better overall quality than Gamanya. Considered to have good quality for ASW grade.

Yield

Hyden has been tested on comparisons with Gamanya and Halberd in totals of 103 and 50 trials respectively during the period 1979 to 1981. In the south-central medium and low rainfall area it is 3% higher yielding than Halberd and this yield advantage increases with later sowings. It also outyields Gamanya (by 3% or more) in later June sowings in the north-central and central, medium rainfall areas.

It has been approved for release in the south-central medium and low rainfall areas to replace Halberd, in the medium rainfall central area to replace Millewa in situations where high screenings may be a problem, and in the medium rainfall north-central and central areas to replace Gamanya in late sowings.

Release in the south-central medium and low rainfall areas should lead to an improvement in quality of wheat contributing to the Albany port zone. As a replacement for Halberd, it has similarly good milling quality and desirably softer grain, at least equivalent strength and more extensible dough properties.

Disease reactions

Hyden is resistant to flag-smut, moderately resistant or susceptible to stripe rust and susceptible to bunt, *Septoria tritici*, leaf rust and most strains of stem rust. Its possible genotype for stem rust is *Sr8* + *Sr9b*. The rust testing was carried out by the University of Sydney as part of the National Rust Control Program. Additional testing with stripe rust was carried out by the Victorian Department of Agriculture.

Breeding: The cross (Gamanya/Inia) was made in 1969. The early generations were grown by the single seed descent method in glasshouses at South Perth, then planted at Wongan Hills in 1971. Yield testing commenced in 1974, quality testing a year later on a sample from the initial yield test.

Breeders: The F₁ population was produced by N. N. Roy. It was then selected by J. Reeves and staff in cooperation with H. M. Fisher, J. Parish and G. B. Crosbie (W. A. Department of Agriculture), also the Bread Research Institute (Sydney) and the University of Sydney.

Finance

The program is supported by the State Wheat Industry Research Committee.

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