

Assuring the quality of South African wheat

South Africa has three major wheat-breeding programs. A new or introduction cultivar is only released for planting if it possesses better agronomical as well as better flour quality characteristics than the cultivars planted commercially in a specific area.

The classification of wheat cultivars is an attempt to provide the wheat industry with new cultivars that perform well agronomically and possess suitable milling, rheological and baking characteristics. Analytical procedures and classification norms are compiled in conjunction with wheat breeders, millers and bakers to ensure market-directed and quality-driven wheat production in the interest of wheat producers and processors. The availability of new and improved wheat varieties is important as a constant demand exists for higher yields, better quality, better processing properties and increased disease resistance.

Classification norms use cultivars as biological quality standards as a frame of reference against which new breeding lines are evaluated. Only cultivars that are successfully grown commercially and possess acceptable agronomical and quality characteristics may be considered as biological quality standards.

As the breeding and development of new wheat varieties with suitable quality characteristics is an expensive, long-term project, classification norms and quality standards are provided to breeders as guidelines that should stand the test of time. Changing the classification norms and establishing new quality standards are for this reason thoroughly investigated and carefully considered to ensure that the long-term goals of breeding programs are achieved. Recent amendments include reducing the number of years' data (from three to two) required for final release of irrigation cultivars as well as relaxed quality criteria with regards to certain quality parameters for high yielding lines.

The effect of climate, rainfall, environmental interaction, cultivation practices and other factors that influence wheat quality, makes the use of fixed criteria or norms for classification purposes impractical. For this reason, cultivars are used as biological quality standards, and acceptable deviations from the standard are established as classification norms. Producers continuously strive to improve the wheat yield and quality by selecting the best cultivars for commercial production in a specific area. High grading standards are set to ensure adequate quality control.

The evaluation of wheat breeder lines and the approval of a new cultivar for release are, since April 2018, performed by the Wheat Forum Cultivar and Technical Committee. A line approved for release, is registered as a cultivar in accordance with the Plant Breeders' Act, Act 15 of 1976, by the applicable breeder company (plant breeder's rights are a form of Intellectual Property rights).

The Wheat Forum requested that two documents, namely 'Analysis Procedure and Evaluation Norms for the Classification of Wheat Breeders' Lines for the RSA', as well as the Cultivar List be hosted on the website of the SAGL. SAGL was also appointed as responsible party for the maintenance of the aforementioned documents.

The cultivar list hosted on the SAGL website is named the Wheat Forum Cultivar List, to distinguish this list from any other lists in existence. The criteria for listing a cultivar on the Wheat Forum Cultivar List is the minuted approval of the cultivar by the Cultivar and Technical Committee of the Wheat Forum. Approval indicates that the cultivar has passed the evaluation process as described in the 'Analysis Procedure and Evaluation Norms for the Release of Bread Wheat Breeders' lines for the RSA' document.

Any addition or elimination of a cultivar to/from the Wheat Forum Cultivar List, shall be based on a resolution documented in Minutes of meetings of the Wheat Forum Cultivar and Technical Committee. The Wheat Forum Cultivar List shall be updated annually upon receipt of the Minutes of the Wheat Forum Cultivar and Technical Committee meeting. The April 2019 revision of both these documents are available on the SAGL website.

Since wheat is a self-pollinating crop, meaning that grain produced has the same genetic composition as the

parent, seed can be harvested and replanted, which results in less seed being sold. In South Africa, approximately 70% of wheat is planted with farm saved seed. The investment in the development of new cultivars is as a result only covered by a small portion of the market. A lack of return on investment therefore prevent new seed companies and new cultivars from entering the market. This situation is however not unique to South Africa. In order to address this issue, various End Point Royalty systems were investigated and the outcome was a proposal to establish a statutory levy for breeding and technology, in addition to the industry statutory levy that has been implemented for many years.

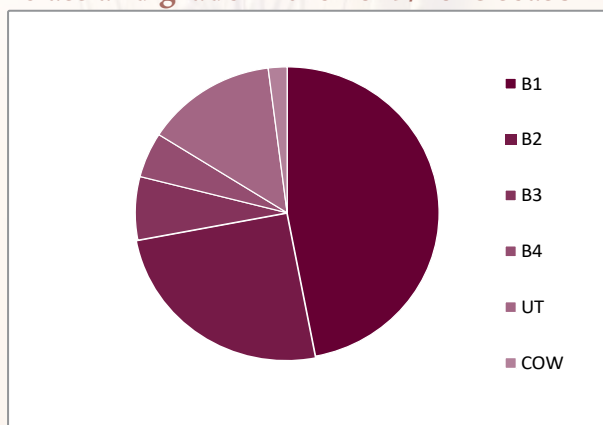
After meetings and consultations with stakeholders and various experts, the South African Cultivar & Technology Agency NPC (SACTA) was established in June 2016. SACTA has been recommended by role-players in the different industries as the body to administer the breeding and technology levy and will make payments to the seed companies from funds collected by means of the levies. The payments will be according to actual performance, calculated each year based on the market share achieved. It is envisaged that this system will eventually be implemented for all self-pollinating crops.

Wheat grades

The 337 representative crop samples were graded as follows: 45% was graded B1, 26% was graded B2, 9% was graded B3, 4% was graded B4, 14% UT (Utility Grade) and 2% COW (Class Other Wheat). The majority of the samples (75%) downgraded to Utility Grade was as a result of either the percentage screenings or mainly the percentage other grain and unthreshed ears, individually, or in combination with the combined deviations, exceeding the maximum allowable level for grades B1 to B4. Most of these downgraded samples originated from the Western Cape.

Grade B1 wheat in the Free State province amounted to 68% (51% in the previous season). In the Irrigation areas 50% (43% in the previous season) of the wheat was graded as B1 and in the Western Cape Province 37% was graded as B1 (48% in the previous season).

Graph 17: Percentage of samples per class and grade in the 2017/2018 season



Graph 18: Percentage of samples per class and grade in the 2018/2019 season

