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# Parameters of Wheat to be Considered for Biscuit and Bakery Purposes

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## ABSTRACT

**Wheat is a primary ingredient in biscuits and bakery products, where its quality parameters significantly influence the final product's characteristics. This article explores the key attributes of wheat, including protein content, gluten strength, starch quality, and moisture levels, which impact dough handling, texture, and shelf life. Additionally, the role of enzymatic activity and ash content in determining flour's suitability for bakery applications is discussed. Emphasis is placed on the selection of soft and medium-hard wheat varieties for biscuits and cakes, ensuring optimal crumb structure and tenderness. The article also examines milling techniques and flour treatments that enhance performance for specific bakery purposes.**

## INTRODUCTION

Wheat is the cornerstone of the bakery industry, providing the essential flour used in a wide range of products, from biscuits to cakes and pastries. The suitability of wheat for these applications depends on its specific characteristics, which influence the quality, texture, and overall appeal of the final product. Factors such as protein content, gluten strength, and starch properties play a critical role in determining the dough's behavior during mixing, shaping, and

baking. Additionally, moisture content, enzymatic activity, and ash levels contribute to the flour's functionality. This article delves into these parameters, highlighting their importance and providing insights into selecting the right wheat for bakery and biscuit production.

## KEY PARAMETERS OF WHEAT FOR BISCUIT AND BAKERY APPLICATIONS

### 1. PROTEIN CONTENT

- Biscuits generally require wheat with low to medium protein content (8-10%).
- Lower protein levels result in less gluten formation, yielding a softer and tenderer texture.

### 2. GLUTEN QUALITY

- Weak and extensible gluten is ideal for biscuits as it allows for easier dough handling and prevents excessive elasticity.
- Excessively strong gluten can lead to tough biscuits that lack the desired crumbly texture.

### 3. STARCH CONTENT AND QUALITY

- High starch content with good gelatinization properties is essential to provide structure and crispness in biscuits.
- Starch damage should be minimal to avoid undesirable dough stickiness.

### 4. ASH CONTENT

- Lower ash content (0.3-0.5%) is preferred to ensure a bright flour color and a lighter biscuit appearance.

### 5. FALLING NUMBER

- Falling number values should range between 250-300 seconds to indicate appropriate alpha-amylase activity, ensuring consistent dough properties and biscuit quality.

### 6. MOISTURE CONTENT

- Moisture levels in wheat should be below 12% to prevent microbial growth during storage and ensure longer shelf life.

### 7. HARDNESS INDEX

- Softer wheat varieties (with low hardness index values) are more suitable for biscuit production as they produce finer flours with lower protein content.

### 8. EXTRACTION RATE

- Lower extraction rate flour (e.g., refined flour) is commonly used to achieve a smoother texture and appearance in biscuits.

### 9. PASTING PROPERTIES

- Flour's pasting characteristics, determined by a Rapid Visco Analyzer (RVA), affect dough consistency and baking performance. For biscuits, moderate viscosity is ideal.

### 10. WATER ABSORPTION CAPACITY

- Low water absorption ensures dough is less elastic and easier to shape, critical for forming uniform biscuits.

## IMPORTANT WHEAT VARIETIES FOR BISCUIT PRODUCTION

Several wheat varieties are specifically cultivated and selected for their suitability in biscuit and bakery applications. These varieties exhibit the desired characteristics discussed above. Below are some of the noteworthy wheat varieties for biscuit-making:

### 1. SOFT RED WINTER WHEAT

- Commonly used for biscuits due to its low protein content and soft texture.

### 2. WHITE CLUB WHEAT

- Known for its low protein and excellent milling properties, making it a top choice for cookies and crackers.

### 3. AUSTRALIAN SOFT WHEAT (ASW)

- A premium variety with fine milling characteristics, extensively used in biscuit production.

### 4. CANADIAN WESTERN SOFT WHITE SPRING (CWSWS)

- Low protein and superior extensibility make it ideal for biscuits and other bakery applications.

### 5. INDIAN VARIETIES

- **Lok-1:** Preferred for biscuit production due to its low protein and good milling quality.
- **Kundan:** A soft wheat variety commonly used in Indian bakery industries.
- **Sonalika:** Another popular choice with moderate gluten quality, suitable for biscuit-making.
- **Phule Satwik (NIAW 3170):** The variety is developed by Agricultural Research Station, MPKV; Niphad. Unique variety for biscuit purpose with biscuit spread factor more than 10 and grain hardness index below 40.

### 6. EUROPEAN VARIETIES

- Varieties like Riband (UK) and Soissons (France) are renowned for their low protein content and excellent biscuit-making properties.

## CONCLUSION

Selecting the right wheat variety and understanding the parameters influencing biscuit quality are critical for producing high-quality bakery products. By focusing on specific traits such as protein content, gluten quality, and starch characteristics, manufacturers can ensure that their products meet consumer expectations. Additionally, using recommended wheat varieties further enhances production efficiency and product consistency. By optimizing these factors, the biscuit industry can achieve superior outcomes in taste, texture, and overall quality.

## REFERENCES

Bharat Malunjkar, Nilesh Magar and Rajendra Lokhande. 2024. The Importance of Wheat Biofortification in India-Enhancing Nutrition for a Healthier Future. AgroScience Today, Volume 5 (9) p 0950-0954.

Nilesh Magar, Suresh Dodake, Sunil Umate and Rajendra Lokhande. 2023. Recommended wheat varieties for Peninsular Zone of India. AgroScience Today, Volume 4 (12) p 723-726.

Nilesh Magar, Umesh Kambale, Kiran Gaikwad and Bharat Malunjkar. 2024. Wheat Crop: Evolution and Present Research Status in India. AgroScience Today, Volume 5 (7) p 0909-0913.

SK Dagade, SS Dodake and NM Magar. Genetic variability, character association and path coefficient analysis in bread wheat (*Triticum aestivum* Desf.). *J Pharmacogn Phytochem* 2020; 9 (6):2149-2155.

Nilesh Magar, Suresh Dodake, Dnyandeo Gadekar, Bhanudas Game, Rajendra Lokhande, Bhalchandra Mhaske and Yogesh Patil. Phule Satwik (NIAW 3170): A soft bread wheat variety for North Western Plains and Peninsular Zone of India. *Curr Agri Res* 2024; 12 (1): 348-355. (doi: http://dx.doi.org/10.12944/CARJ.12.1.28)