

Indian Milling

Operational Challenges & Solutions

Navigating the complexities of wheat processing in India's diverse agricultural landscape





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35+ years of extensive experience in the flour milling industry

Expertise in domestic and international markets spanning production, quality control, raw material procurement, design, and mill erection

Currently serving as the Production Manager and Plant Head at Sahuwala Flour Mills in Tamil Nadu

Global experience includes senior positions in India as well as abroad like Kenya, Trinidad and Tobago, and Nigeria

The Indian Wheat Challenge

Indian wheat varies significantly by region with high impurity levels and mixed varieties, making isolation, cleaning, and blending challenging for millers seeking consistent finished products.

Wheat is grown across India with unique parameters and varieties in each area. Not all wheat types suit every milling requirement.

Hard Wheat

High protein content for bread production

Soft Wheat

Ideal for biscuits and pastries

Medium-Hard Wheat

Versatile for multiple applications

Durum Wheat / Malwaraj Wheat

Premium semolina production



**THE HARDEST PART
OF WORKING IN
A FLOUR MILL
ISN'T THE WHEAT—
IT'S THE UNCERTAINTY
BEHIND IT.**



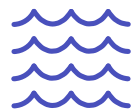
Critical Wheat Parameters

Wheat analysis is more critical than finished-product analysis. Proper wheat assessment enables systematic grouping and effective blending throughout the milling process.



Sedimentation Value

Indicates gluten quality and protein strength for dough performance



Moisture Level

Critical for storage stability and milling efficiency



Gluten Content

Determines elasticity and structure in final flour products



Hectolitre Weight

Measures grain density and overall wheat quality



Using historical data to classify wheat into groups based on specific parameter ranges helps achieve accurate blending. Silo storage in Indian conditions adds complexity.



Major Impurity Challenges

High Wastage Sources

Impurities arise during farming, harvesting, storage (infestation), and through wrong practices by traders and suppliers.

Common Contaminants

- Mud balls from black soil harvest
- Stones, dust, and rubbles
- Foreign seeds like mustard
- Chemical parameter variations

Quality Variations

Protein percentage, gluten quantity and quality, moisture levels, and sedimentation values fluctuate significantly across regions.

Storage & Blending Strategy

Systematic Approach

Wheat must be stored by area of origin and gluten properties. The blending system should be carefully planned and integrated into the cleaning section.

Blending inside the wheat godown should be avoided. Lab-test blended wheat for key parameters.

Blending is crucial because good wheat alone may not always be economically viable. Proper blending achieves both desired flour quality and mill profitability.

01

Classify Wheat Groups

Identify varieties A, B, C by region and parameters

02

Assign Storage Locations

Store in specific warehouse or silo positions

03

Control Flow Balance

Use VFD-controlled conveyors and accurate scales

04

Test & Document

Lab verification and systematic documentation

Advanced Cleaning Section



Define Load Control

Control load for each section precisely



Redesign Flow Sheets

Adapt to regional impurity levels



Add Extra Equipment

Multiple destoners and magnetic rolls



Install Sortex Systems

Reduce microbiological load

Water Addition & Tempering

- Critical for milling performance and financial efficiency
- Automated dampening systems recommended
- Document and implement tempering time
- Calibrate flow meters regularly

❏ High impurities affect mill economics, but clean wheat affects complete operations and finished products. Proper conditioning is required for optimal mill operation.



Milling Excellence

Maida quality across India is becoming more standardized. Bakeries and end users increasingly demand specification-based flour. Biscuit flour is no longer low-grade—specific flour requires flow sheet and blend changes.



Roll Fluting Management

Ensure timeline system for roll changing. Interchange disposition to increase flute life. Worn rolls affect flour characteristics and power consumption significantly.



Reduction Rolls

Matt surface with proper taper strongly recommended. Flour quality, extraction, WAP, and starch damage are all controlled by reduction rolls. Replace and sandblast regularly.



Purifiers

Cloth and maintain purifiers for low ash flour. Clean stock to head reduction rolls ensures better quality output and balanced milling stock distribution.



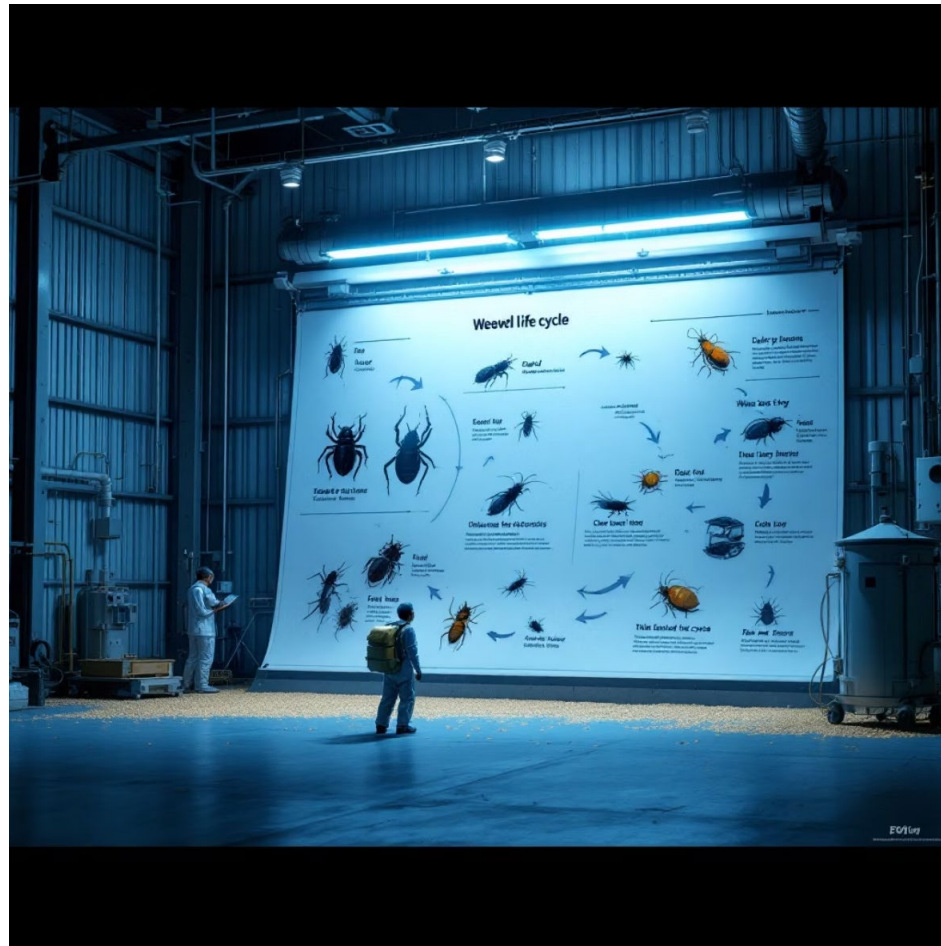
Sifters

Check for torn sieves once per shift. Clean every 15 days. Keep spares available. Sifter cleaners must be checked and replaced. Infestation is a regular issue in tropical weather.

"Sifter is the heart of the mill—take care of your heart well."

Breaking the Infestation Cycle

Infestation is critical in tropical climates where weevil cycles thrive. Break the 21-day weevil life cycle through strict hygiene and cleaning protocols.



There is **no shortcut** to controlling infestation; strict hygiene is the only solution.

1 Every 15 Days

Plan sifter, purifier, maida collecting screw

Monthly 2

Filter cleaning and inspection

3 As Frequent as Possible

Packing gyro sieves and line drums

Continuous 4

Avoid cross-contamination in dead-end areas

Consistent maintenance is needed for Screw conveyors, Downspout pipes, plansifters and purifiers

Key Areas of Improvement

Special focus needs to be given to

- Mill hygiene
- Pest control and infestation management
- Cleaning Operating Procedures (COP)
- Magnet placement and separation efficiency
- Sortex in milling section for semolina.
- Water Absorption Power (WAP)
- Flour granularity



Value-Added Products

Producing high-quality semolina (sooji) and chiroti (fine sooji) from cleaned, stone-free wheat improves output quality and enhances mill economics.



Technical Factors

Starch damage control is influenced by grinding capabilities of reduction rolls. Wheat Grist and Flour Granularity - The concept of coarse flour (150 μ / 132 μ) is slowly getting phased out with requirement of fine flour is (118 μ / 95 μ). Mill must designed & clothed accordingly.

Key Areas of Improvement - Packaging



Manpower

Manpower is a big issue in Indian milling



Automatic Packing Machines

Many suppliers in the market



Requirement of Bulk Tankers

Increase in demand
Regular cleaning, Monitoring gaskets, Filter bags checking



Quality Control & Compliance

Laboratory Operations

Equip lab with essential instruments. Operate 24×7 where feasible. Follow approved SOPs strictly. Support milling team rather than only identifying faults.

FSSAI Compliance

Constitute dedicated team for certification. Compile and maintain legal documents. Plan mill operations as if audits are daily. Food safety is becoming mandatory.



Define Parameters

Document quality parameters for raw materials and finished products



Joint Responsibility

Milling and QA teams share accountability for meeting standards



Food Defense

Prepare for future industry requirements with proper planning

The Future of Indian Milling



Human Resource Investment

Training in modern milling techniques and systems is essential for industry growth
Hiring of qualified personnel



Mill Automation

Implementation of automated systems is transforming operational efficiency



Power Optimization

Energy audits and consumption reduction plans are critical requirements



Bulk Tanker Systems

Future of Indian milling requires foolproof bulk delivery infrastructure

Indian wheat blending is more challenging than overseas wheat due to diverse quality variations, whereas international varieties are more defined and consistent. Over 35 years, Indian milling has grown—mill owners are investing in technology, flour quality is now discussed, and mills are being planned to international standards.

