Quality Control Protocol: Moisture and Protein Analysis in Grains

Document Information

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Department: Quality Assurance

Prepared by: Natalie Ruiz, QC Specialist

Reviewed by: Henry Walker, QA Lead

Approved by: Dr. Alan Becker, Director of Quality

1. Objective

To establish quality control measures for moisture and protein testing in cereal grains using oven drying and Kjeldahl/NIR methods.

2. Scope

This protocol applies to all lab analyses conducted on incoming raw grain batches (wheat, corn, paddy) and in-process product lots at GPC facilities.

3. Reference Documents

- SOP-LAB-QC-014: Moisture Analysis

- SOP-LAB-QC-019: Protein Analysis

- ISO 712:2009 & AOAC 990.03

4. Equipment and Standards

- Calibrated Hot Air Oven

- NIR Analyzer / Kjeldahl Apparatus

- Analytical Balance

- Certified Reference Materials (CRM)

- Internal Control Samples

5. QC Frequency

- Moisture: One test per 10 metric tons of raw material

- Protein: One test per production shift or per lot

- Control samples: Every 5 test cycles

6. Acceptable Ranges

- Moisture (Wheat): 11.0% – 13.0%

- Protein (Corn): 7.0% – 9.5%

- Any result outside this range must trigger a deviation report and retest

7. Test Validation

- Compare sample test result with CRM.

- Acceptable deviation: ±0.3% from reference value.

- If deviation >0.3%, invalidate result and re-analyze.

8. Result Documentation

- Results are entered in ELN with analyst initials and timestamp.

- Include raw weights, instrument readings, and final % values.

- Deviations must be logged in the QC Deviation Tracker.

9. Non-Conformance Handling

- Initiate NCR form for failed results.

- Notify QA Supervisor within 1 hour.

- Place affected lot under HOLD status until cleared.

10. Training Requirements

- Analysts must complete module QC-GRAIN-M01 and pass assessment.

- Records of qualification must be retained and reviewed biannually.