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Executive Summary of the Commercial Rice Mill First Year Report

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Conclusion: “The obtained results during the first year of the project have revealed that there is no consistent trend of milling yield results from laboratory and commercial mills.”

The University of California, Davis (UC Davis) conducted a study on behalf of the Federal Grain Inspection Service (FGIS) to compare the milling yield results obtained using the FGIS procedures and approved equipment with the results obtained by commercial mills. This study includes samples from the 2015 and 2016 crops. The participating commercial mills collected samples from September 2016 through October 2017.

Four commercial mills located in Arkansas, California, and Louisiana agreed to participate in the study and provided 186 samples. These samples included long grain rice (pure and hybrid varieties), medium grain rice (unmixed and mixed), and short grain rice (unmixed and mixed). UC Davis subcontracted with the California Agri Inspection Company (Cal Agri), an FGIS official service provider, to provide results using the FGIS procedures and approved equipment.

The listed below are the findings from the study:

1. Milling Environment

- a. The commercial mills had significantly higher temperatures and relative humidities than the Cal Agri lab although M1's (mill 1) temperature was less than Cal Agri.
- b. The temperature and relative humidity at the commercial mills varied by season.
- c. Cal Agri's temperature and relative humidity was consistent throughout the study period.

2. Milled Rice Temperature

The FGIS method and approved equipment yielded milled rice with significantly higher temperatures than the milled rice coming out of the commercial mills.

3. Dockage

The dockage in the collected samples varied by the participating commercial mill.

4. Color and Degree of Milling

The samples from the commercial mills and from the FGIS process were a creamy color. There was no difference in the Degree of Milling.

5. Moisture

- a. M3 (mill 3) had significantly lower moistures than the other three commercial mills.
- b. The moisture for the samples when tested at Cal Agri was lower but not significantly different than the moistures measured at the commercial mills.

6. Milling Yield and Whiteness

The milling yield is determined by the percentage of total rice yield (TRY or TR) and the percentage of whole kernels (WK) or head rice yield (HRY) after paddy rice is milled. Whiteness is not an FGIS factor but may be used to indicate the amount of bran removed from the rice during the milling process.

- a. The results were not consistent over all four quarters for the same varieties.
- b. The following table breaks down the percentage of samples for TRY, HRY, and Whiteness by statistically significant differences where the FGIS procedure yielded results less than the commercial mill process (FGIS < Commercial), where the FGIS procedure yielded results higher than the commercial mill process (FGIS > Commercial), and no statistically significant differences.

Category	TRY	HRY	Whiteness
FGIS < Commercial	29%	16%	73%
No significant difference	29%	35%	27%
FGIS > Commercial	42%	49%	0%

7. Grades

The samples from the commercial mills and from the FGIS process yielded grades that are aligned with the exception of three varieties: CL111 (long grain rice pure variety), Jupiter (medium grain rice pure variety), and X745 (long grain rice hybrid variety).