

## Supplementary Material:

# Profiling of 2-Acetyl-1-Pyrroline and other Volatile Compounds in Raw and Cooked Rice of Traditional and Improved Varieties of India

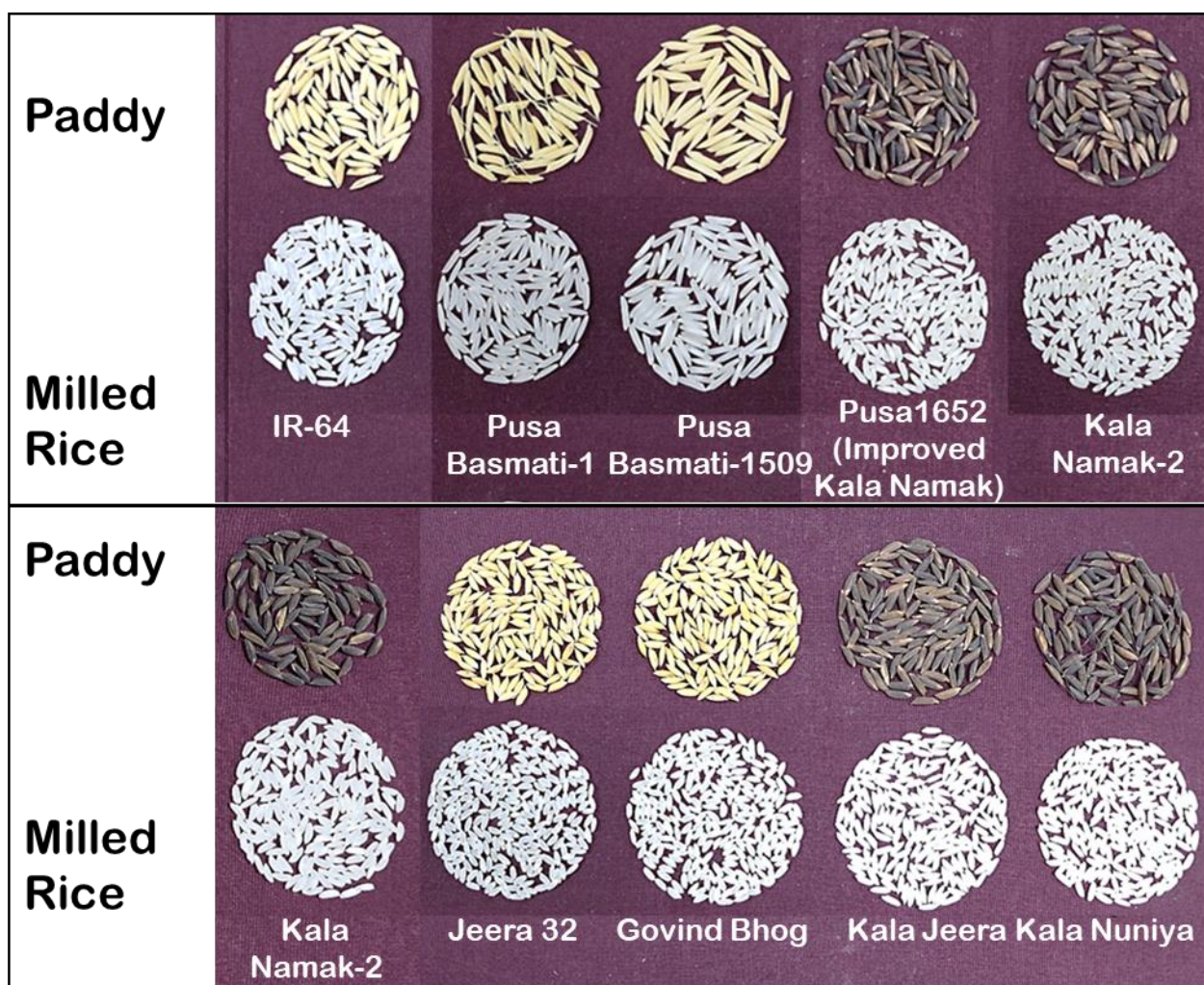
Deepak Kasote <sup>1</sup>, Vivek Kumar Singh <sup>1</sup>, Haritha Bollinedi <sup>2</sup>, Ashok Kumar Singh <sup>2</sup>, Nese Sreenivasulu <sup>3,\*</sup> and Ahmed Regina<sup>1</sup>

<sup>1</sup> Centre of Excellence in Rice Value Addition (CERVA), International Rice Research Institute (IRRI) - South Asia Regional Centre (ISARC), Varanasi-221106, Uttar Pradesh (U.P.), India; [d.kasote@irri.org](mailto:d.kasote@irri.org) (D.K.); [vivek.singh@irri.org](mailto:vivek.singh@irri.org) (V.K.); [a.regina@irri.org](mailto:a.regina@irri.org) (A.R.)

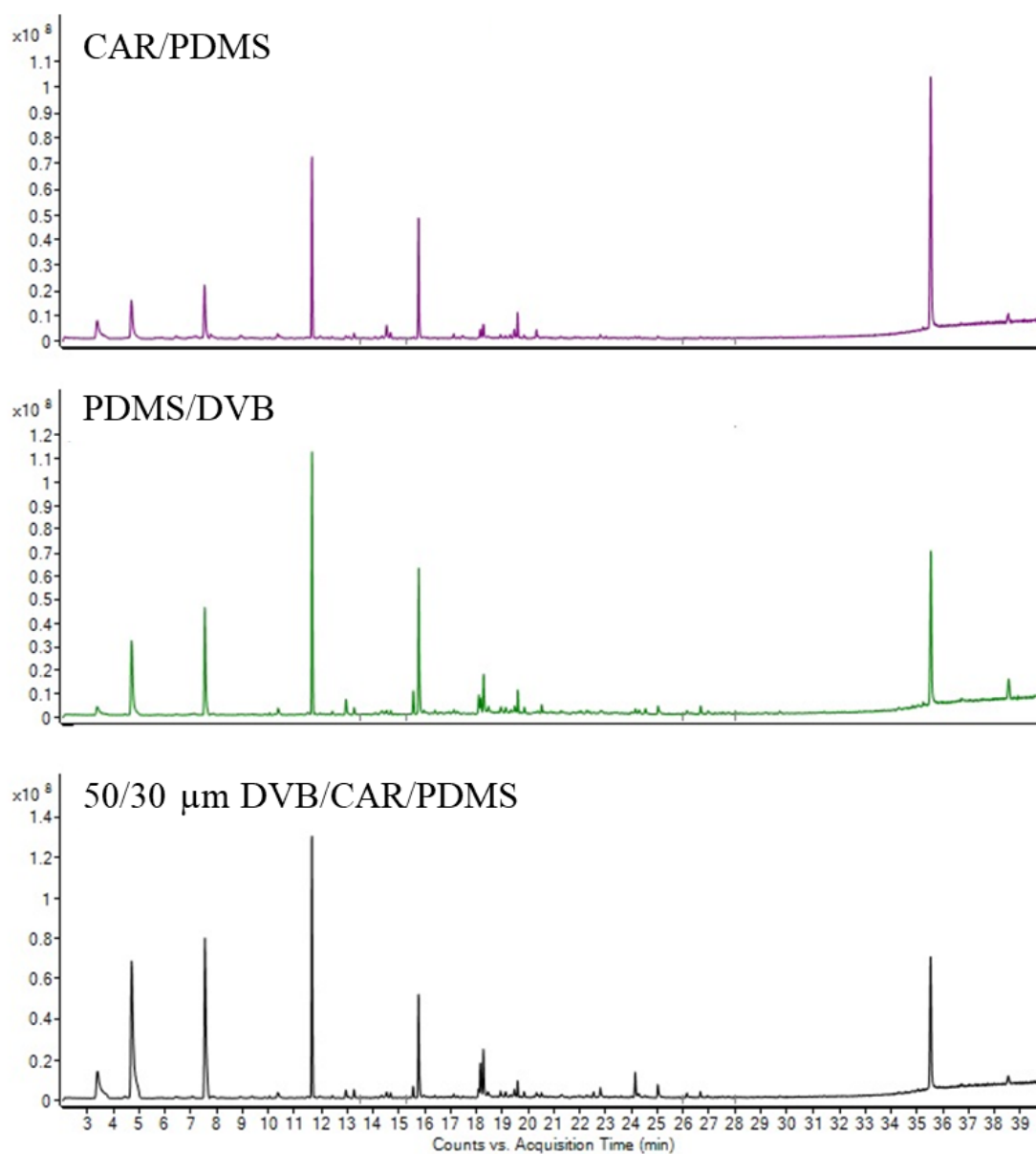
<sup>2</sup> Division of Genetics, ICAR- Indian Agricultural Research Institute (IARI), New Delhi, India; [haritha.agrico@gmail.com](mailto:haritha.agrico@gmail.com) (H.B.); [aks\\_gene@yahoo.com](mailto:aks_gene@yahoo.com) (A.S.)

<sup>3</sup> Consumer-driven Grain Quality and Nutrition Research Unit, International Rice Research Institute, Los Baños, Laguna, 4031, Philippines; [n.sreenivasulu@irri.org](mailto:n.sreenivasulu@irri.org) (N.S.)

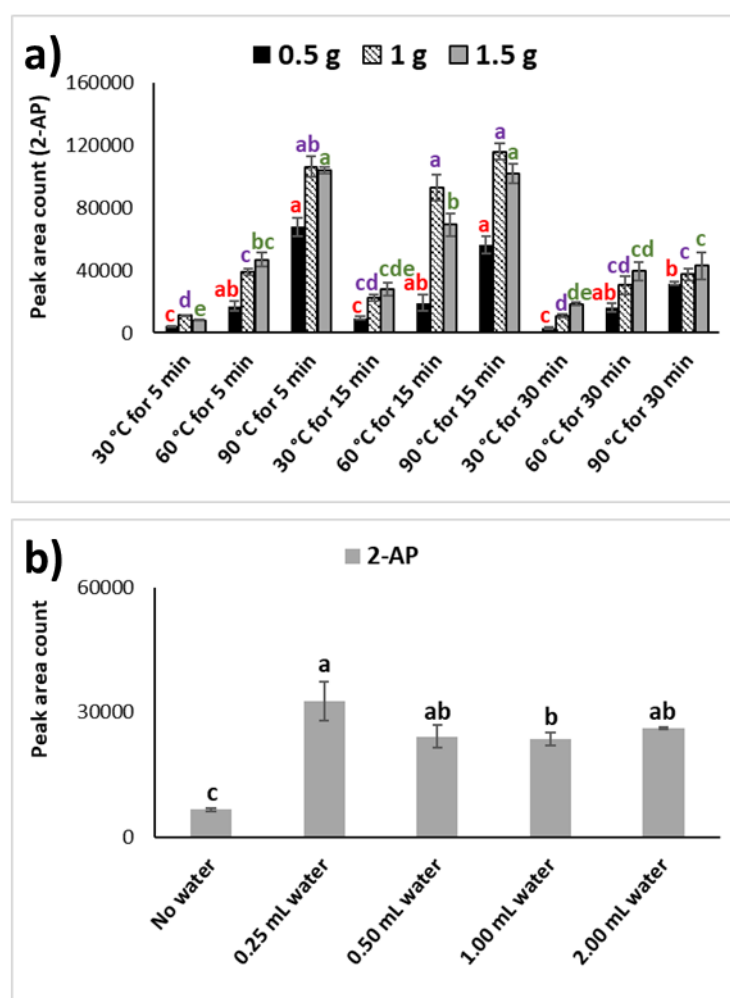
\* Correspondence: [n.sreenivasulu@irri.org](mailto:n.sreenivasulu@irri.org) (N.S.)



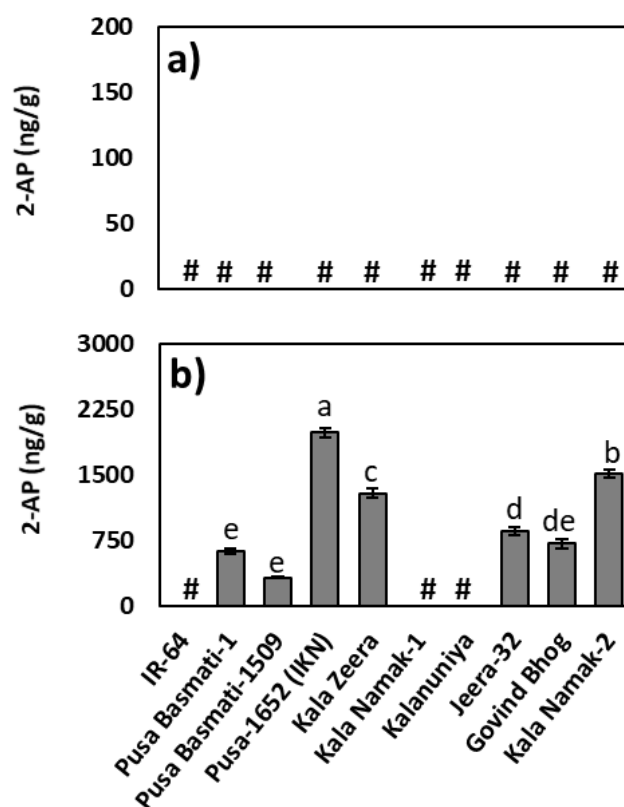
**Figure S1.** Images of paddy and milled rice samples of studied traditional and improved varieties.



**Figure S2:** The total ion chromatogram (TIC) of volatile compounds of rice sample, which were extracted using three different SPME fibers, CAR/PDMS, PDMS/DVB, and 50/30  $\mu$ m DVB/CAR/PDMS.



**Figure S3.** Optimization of SPME conditions. **a)** Comparative peak area of 2-acetyl-1-pyrroline (2-AP) at different extraction times (5, 15, and 30 min), incubation temperatures (30, 60, and 90 °C) and sample weights (0.5, 1.0, and 1.5 g). **b)** Effect of different amounts of water (0.25, 0.50, and 1.00 mL) addition in 1.0 g rice grain on the peak area of 2-AP after extraction at 60 °C for 15 min. Different letters indicate significant differences at  $P < 0.05$ , as determined by Tukey's test.



**Figure S4:** **a)** 2-acetyl-1-pyrroline (2-AP) content in raw, and **b)** cooked rice samples of ten different traditional and improved varieties grown in the wet season of 2019. The 2-AP content below the level of detection is indicated as hash (#). Different letters indicate significant differences at  $P < 0.05$ , as determined by Tukey's test. Pusa-1652 (Improved Kala Namak) is abbreviated as Pusa-1652 (IKN).

**Table S1:** Optimized multiple reaction monitoring (MRM) mode parameters for 2-acetyl-1-pyrroline (2-AP) and internal standard 2,6-dimethylpyridine (2,6-DMP). [RT: retention time, CE: collision energy].

Sr. No.	Compound	RT (min)	Transitions	CE (eV)
1.	2,6-DMP	12.062	107.1 → 65.1	25
			107.1 → 92.1	20
			107.1 → 66.1	15
2.	2-AP	14.347	111 → 83	10
			111 → 82	25