

Category	: International Rice Research Conference
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Title of Entry	: Organization of the variability of the rates of leaf appearance and its change between two irrigated cropping systems in an indica rice diversity panel
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: The rate of leaf appearance is related to early vigor, crop duration, and its environment. This experiment aimed to measure the variability of the leaf appearance rate and its response to two watering systems within the rice indica race. The GRISP Global Rice Phenotyping Network assembles a multi-environment, multi-trait phenomics resource for rice diversity panels. Our team specifically examined the dynamics of leaf appearance of 304 indica accessions of the modified PRAY panel that were either transplanted and flooded or direct-seeded and grown in aerobic conditions. In rice, the leaf appearance rate is fast for the first 4-5 embryonic leaves, slows down for the next leaves until about leaf 12, and slows down again for the last leaves. This pattern was confirmed in all plants with crop duration over 110 days. In earlier varieties, a proportion of the plants showed only two distinct phases intermediated by leaf 5. The earlier the variety, the higher this proportion was. The rates of leaf appearance and the durations of the second and third phases were strongly correlated: all late varieties had slow rates of leaf appearance and late transition to third phase. Meanwhile, the rate of appearance of the embryonic leaves was independent from the other four parameters. Differences in the leaf appearance kinetics between aerobic and flooded conditions were also related to the variety's crop duration. In varieties with duration over 105 days, the second phase is characterized by faster leaf appearance rate in flooded conditions. On the third phase, the rates equalize for both conditions. On the contrary, earlier varieties showed a reversed pattern: equal and then faster rate in flooded conditions, before and after the second transition, respectively. The transition from the second to the third phase was earlier by 0 to 14 days in aerobic than in flooded conditions for

varieties with 80 to 105-day duration, and equal to 14 days for later varieties. All parameters of the leaf appearance kinetics are thus strongly correlated with the crop duration of the indica rice varieties except the rate of appearance of the embryonic leaves that can be bred independently.

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