

Category	: International Rice Research Conference
Select Theme	: Disruptive technologies and innovations
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Keyword 1	: Innovation systems
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Keyword 3	: Phenomics
Title of Entry	: Faster heading of rice crop in relation to “shoot unit” concept
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**Abstract** : Rice growth duration and phenology are the major determinants of the agro-ecological and agronomic suitability of rice cultivars. Time to flowering has been an important trait for improving crop productivity and adaptation. The development stage of a plant defines its physiological age and is characterized by the formation of the various organs and their appearance. Plants construct their canopies by the repeated formation, expansion and senescence of a basic unit, the “shoot unit” or “phytomer”. Shoot of a rice plant is also divided into “shoot unit”. A shoot unit is composed of a leaf, an internode immediately below the leaf, and a tiller bud produced at the basal part of the internode. Rice structure and morphology were followed over time in terms of number and position of leaves and tillers. The probability of tillers reaching heading depended on their topological position and emergence time. The primary tillers of increasing rank generally appeared successively on the main stem with a decreasing flowering ratio. The number of phytomers per axis decreased with branching order and rank. There is synchronous appearance of tillers and leaves on the main stem throughout plant development until flowering, and a relation between emergence time and tiller flowering. Synchronization of maturity of the tillers indicates a process of programming on the part of the plant for termination of life cycle, which depended on their topological position, Order of phytomer and emergence time, also might have been cured by external competition between tillers for primary resources. Leaf number of the late-tillers was lower than the older tillers because of the short duration of growth. In cereal crops, including of rice, the final number of phytomers has direct correlation with heading time and growth period. We can reduce rice crop duration using aged 'shoot unit' or especial order of phytomer.

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