

Category	: International Rice Research Conference
Select Theme	: Systems physiology
Keyword 1	: Yield potential
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Title of Entry	: Diversity of rice (<i>Oryza Sativa</i> L.) indica response to low radiation during maturity stage
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: Climate variability is related to a reduction of radiation in different rice production regions around the world; this reduction causes a decrease in yield, especially if it occurs during the maturity phase. We investigated the diversity in the response to low radiation during the maturity stage for indica rice in wet and dry seasons in order to identify traits related to tolerance to low radiation during the maturity stage. A total of 60 varieties of indica rice (subset of PRAY diversity indica panel) were characterized in field experiments at CIAT - Colombia during 2015-dry season and 2016-wet season. When the plants reached 50% of flowering, plants were covered until maturity with a black polyethylene screen that reduced the radiation by 50%. Given the differences in days to flowering, staggered planting was applied to avoid the effect of desynchronized flowering on plant responses to low radiation conditions. We measured grain yield, panicle number (PN), grains per panicle (NGP), fertility (FER) and Grain Weight (1000GW) together with biomass and the dimension of organs (leaves, tillers, panicle) at flowering and maturity stage. In control plots, yields in 2016 were significantly lower than yield in 2015, indicating the response to low environmental offer (wet season in 2016). Compared to the control, the treatment of low radiation reduced on average for 2015 and 2016 GY by 26.0% and 25.7%, FER by 15.8% and 16.3% and 1000GW by 4.3% and 3.9% respectively. No reduction was observed for NP and NGP indicating that the stress only affected traits formed during the maturity stage. In 2015 and 2016, genotypes tolerant to low radiation showing higher FER, 1000GW in 2015 and higher FER in 2016 showed greater number of grains per panicle and high specific stem weight at flowering and higher grain filling rate under low radiation. This study showed that improving sink capacity in indica rice (number of grains per panicle, specific

stem weight, and grain filling rate under low radiation) is an alternative for further yield improvement targeting tolerance to low radiation during the maturity phase for wet or dry season.

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