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Increasing the yield through improving 12 mega rice varieties using a dominant QTL qGN4-1 for high grain number

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Rice is the world's most important staple food crop feeding more than half of the human population. The demand for rice is expected to increase further with the increase in the global human population but the annual gain in yield potential through breeding has slowed down. Large number of well-filled grains per panicle is an important yield component trait in rice. Identification of a major QTL for grain number on chromosome 4 (qGN4-1) has provided the opportunity to apply marker assisted backcrossing (MAB) to develop rice cultivars with high grain number. Successful examples of QTL transfer to rice are introgression of saltol and sub1 loci in rice for enhanced salt and flooding tolerance, respectively. We are transferring the qGN4-1 in twelve rice mega varieties namely CSR-30, CR-1009, HUR-105, IR-64, MTU-1010, Pusa-44, Pusa Basmati-1, Pusa Basmati-1121, Ranjit, Sambha Mahsuri, Sarju-52 and Swarna. Donors for the transfer of qGN4-1 QTL are: HG-28, HG-67 (RILs from pusa1266/Pusa Basmati-1 cross). The flanking SSR markers to qGN4-1 namely, nkssr 04-19, RM3276, Hvssr 04-49 and RM2441 were evaluated for polymorphism among the selected parents. Each of the crosses was confirmed by the presence of donor alleles. Data of augmented field design shows increase in 50-100 grains per panicle. Phenotypic characteristics such as plant height, flag leaf length, flag leaf width, panicle length, primary and secondary panicle branching shows slight increase respectively whereas tillering capacity decreases with sturdy stem. The study will lead to development of a series of near isogenic lines with and without the grain number QTL qGN4-1 in twelve different genetic backgrounds mega rice varieties for studying the stability of this QTL.

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Effect of different media on the shoot initiation of *Centella asiatica*

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Centella asiatica, also known as gotu kola, contains several active constituents and the most important bioactive compounds are triterpenoid saponins including asiaticoside, centelloside, madecassoside and asiatic acid. In addition, *Centella* sp. contains other components including volatile oils, flavonoids, tannins, phytosterols, amino acids and sugars. Due to its medicinal importance, this plant is being overexploited and to conserve this plant, it is necessary to micropropagate this plant in laboratory with high biomass yield. In the present investigation, comparative study of different accession of *Centella asiatica* for shoot initiation was performed. Optimizing the media for shoot culture is one of the critical parameter. So there is a need to find such conditions that will enhance the growth and phytochemicals production. For shoot culture, explant of different accession of *Centella asiatica* were inoculated in different media i.e., MS, Gamborg's B5 and Nitsch which were supplemented with 1.5 mg/l BAP and BAP in combination with 0.5 mg/l NAA. The cultures were incubated at 25±2° C with photoperiod of 16 hours. After four week of incubation period best media was optimized. In future effect of different carbon sources on the growth and production of phytochemicals will be observed.

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