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The role of alternative splicing in two maize lines under herbicide stress conditions

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Plants, as sessile organisms, must adapt their growth and metabolic style to a changing environment. Splicing is one of the mechanisms which play an important role in plant adaptation and is an additional element of fitness benefit adjusted to the limited capacity of genome size.

Studies of splicing and its role in diverse aspect of cell biology, pathology and stress response, has remained undescribed for many plant species, including maize. Through the mechanism of alternative splicing, exons from primary transcripts (pre-mRNA) with multiple introns may undergo ligation in many different ways generating multiple proteins from single gene. This process can affect mRNA stability and translation efficiency as well as activity, cellular localization, regulation and stability of coding protein.

For better characterization of alternative splicing role in plant herbicide stress response, we sequenced transcriptomes of two maize breed lines - sensitive and tolerant to herbicide RoundUp. We used Illumina next-generation sequencer Genome Analyzer IIx and we conducted pair-end sequencing. As a result we obtained 35 to 76 mln 50nt reads per sample.

Using bioinformatics tools such as BowTie, TopHat, Cufflinks, Cuffdiff and CummRbund, we managed to identify between sensitive and tolerant maize line. We also managed to identify different types of splicing events and confirm gene expression using real-time PCR.

Biography

Joanna Gracz has graduated in Biotechnology in University of Life Sciences, Poznań and started her Ph.D. studies in 2009 in Institute of Bioorganic Chemistry, PAS, Poznań as a member of Protein Biosynthesis Group. She is interested in molecular biology of plants related with stress response.

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Effect of moisture content on physical and mechanical properties of nutmeg (*Myristica fragrans* Houtt.)

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The nutmeg fruits were pendulous, broadly pyriform, yellow, smooth, 70-100 mm long, fleshy splitting open into two halves when ripe, showing the ovoid 20-30 mm long dark brown shining seed with hard seed coat, surrounded by a glaciate red aril attached to the base of the seed. The study was conducted to determine effect of moisture content on the physical properties of nutmeg nuts and kernels at two different moisture contents (12% and 14% (w.b.)). The moisture contents of nutmeg nuts and kernels had no significant effect on physical properties such as geometrical mean diameter, sphericity, 100 nuts mass, porosity and co-efficient of friction and mechanical property such as compressive strength. However, the moisture content significantly affected the true density, bulk density and angle of repose. The study showed that the physical properties of nutmeg nuts and kernels, enlarging the knowledge about this species and providing useful data for its post-harvest handling, to design sorters and grading machines, and further industrial processing.

Biography

Prashant Pandharinath Said is a Research Scholar at Department of Farm Engineering, Banaras Hindu University, Varanasi. He has successfully completed MTech (Agriculture Engineering) in Post Harvest Process and Food Engineering from University of Agriculture Sciences, Bangalore. He has published 3 books and several research papers in reputed journals.

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