J Food Process Technol 2016, 7:9(Suppl)
http://dx.doi.org/10.4172/2157-7110.C1.048

Performance of upland rice at different fertilization practices

Rocha L V, Temanel Billey E and **Desamiro Nenita V**
Isabela State University, Echague, Philippines

The low yield and unstable yields of upland rice were mainly due to water availability, weed pressure and nutrient stresses or its combination. Nutrients are delivered to the roots primarily by mass flow and diffusion but the delivery rate decreases as the moisture content of the soil decreases. The lower soil moisture content in upland rice cultivation reduces nutrients supply to the roots and resulted in the lower rate of plant uptake. Experiments were conducted to determine the agronomic characteristics and physico-chemical analysis of upland rice with the different fertilization practices. Studies were conducted at the Isabela State university, Echague, Isabela, Philippines during the main season 2012 and off-season 2013. The upland rice varieties tested were Pinilisa and Apo in factorial experiment following the fertilization management: Farmer's Practice, Integrated Nutrient Management, Recommended Rate (60-40-30 kg NPK ha^{-1}), and Control. Results showed that variety were significantly affected as to the number of productive and unproductive tillers, number of filled and unfilled grains, 1000 seed weight, grain and straw yield ha-1. Fertilization protocol significantly affected the grain and straw yield. The interaction of variety and fertilization practices on plant height showed that Apo applied with the recommended rate differed significantly with Pinilisa applied with different fertilization practices and Apo applied with Farmer's Practices. Longer panicle was obtained by Pinilisa applied with INM over Apo applied with the different fertilization practices. Apo applied with integrated nutrient management had a higher protein content of 11.5 compared to the farmer's practice (8.4), recommended rate (9.8) and control (8.5).

lvrocha121260@yahoo.com

Evolutions of structural properties of native phospho casein (npc) powder during storage

Sarah Nasser[1, 2, 3], **Anne Moreau**[2, 3], **Alain Hédoux**[3], **Romain Jeantet**[4] and **Guillaume Delaplace**[2, 3]
[1]Centre National Interprofessionnel de l'Economie Laitière, France
[2]INRA Processus aux Interfaces et Hygiène des Matériaux, France
[3]UMET, France
[4]INRA Laboratoire de Recherches de Technologie Laitière, France

Background: Spray dried powders containing some casein are commonly produced in dairy industry. It is widely admitted that the structure of casein evolves during powder storage, inducing a loss of solubility. However, few studies evaluate accurately the destabilization mechanisms at molecular and mesoscopic level, in particular for Native Phospho Casein powder (NPC). Consequently, at the state of the art, it is very difficult to assess which secondary structure change or crosslinks initiate insolubility during storage. To address this issue, controlled ageing conditions have been applied to a NPC powder [which was obtained by spray drying a concentrate containing a higher content of casein (90%), whey protein (8%) and lactose (few %)]. Evolution of structure and loss of solubility, with the effects of temperature and time of storage were systematically reported.

Methods: FTIR spectroscopy, Raman and Circular Dichroism were used to monitor changes of secondary structure in dry powder and in solution after rehydration. Besides, proteomic tools and electrophoresis have been performed after varying storage conditions for evaluating aggregation and post translational modifications, like lactosylation or phosphorylation. Finally, TOF-SIMS and MEB were used to follow in parallel evolution of structure in surface and skin formation due to storage.

Results & Conclusion: These results highlight the important role of storage temperature in the stability of NPC. It is shown that the rise of post translational modifications, disulphide bridges and physical cross link contribute to the destabilisation of structure and aggregation of casein. A relative quantification of each kind of cross link, source of aggregates, is proposed. In addition, it has been proved that migration of lipids and formation of skin in surface during the ageing also explains the evolution of structure casein and thus the alterations of functional properties of NPC powder.

Nasser@lille.inra.fr