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## Research and Development of Radiation Processing of Polysaccharide for Agricultural Sector in Myanmar

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Myanmar is an agricultural-based country in which rice is the main staple food and present agricultural systems still follow the traditional methods that utilise the available natural resources combined with improved cultural practices. To fulfil the major needs for improving safety agricultural productivity in the country, and to apply radiation technology for useful products in agriculture, current research is based on radiation processing of polysaccharide for production of super water absorbents and plant growth promoter (liquid fertilizer) using Gamma Radiation. Corn starch, Brown seaweed and Rice straw cellulose were used as polysaccharide in this research work. Morphological structures of products super water absorbents from corn starch and rice straw cellulose were analyzed by Scanning Electron Microscope (SEM). Fourier Transfer Infrared (FTIR) was used to analyze the changes of chemical structure of the original polysaccharides and products (super water absorbents and plant growth promoter). The effect of radiation dose and monomer concentration on grafting efficiency, gel fraction, crosslink density, and swelling degree were studied for two types of super water absorbent. It was found that the grafting efficiency and gel fraction increased with increasing in radiation dose as well as the higher in crosslink density, which is directly proportional to increasing in radiation dose, led to decreasing in swelling degree. Decreasing molecular weights of the irradiated seaweed liquid fertilizer (SLF) were generally found with increasing radiation doses. To study the water retention properties of super water absorbents and growth promotion effect of seaweed liquid fertilizer (SLF), field tests were done. This research showed that radiation technology is very useful not only for agriculture sector but also for environmental monitoring since the agricultural waste such as rice straw was used as polysaccharide in this research work.

### Country or International Organization

Myanmar

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