

4<sup>th</sup> International Conference on  
**GREEN ENERGY & EXPO**  
&

6<sup>th</sup> International Conference on  
**RECYCLING: REDUCE, REUSE & RECYCLE** November 06-08, 2017 | Las Vegas, USA

## Recycling paddy husk for improving plant growth yield and disease resistance

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**Statement of the Problem:** Paddy husk (PH) is an agricultural waste which has not been utilized properly worldwide. Mostly it is left unused as waste or simply burned in the field creating significant environmental problems. It is expected to have about 700,000 tons of paddy husk production in Sri Lanka in year 2020. PH is an organic nutrient source particularly rich in silicon.

**Methodology & Theoretical Orientation:** Experiments were conducted to investigate the effect of incorporation of PH in the growing substrate to improve plant growth, yield and disease tolerance. A simplified hydroponics system (SHS) with PH and sand (3:2 v:v) media was tested on capsicum plants. In addition, the effect of amendment of soil media with different ratios of PH was investigated on *Capsicum annuum L.* The effect of amendment of potting media of rubber nursery plants with 20% of PH charcoal or PH ash was also studied.

**Findings:** More than 50% of soluble Si was detected in the nutrient solution of SHS as measured by colorimetric method. SHS was effective for increasing fruit length, fruit weight, shoot length, root length with 83% of reduction of anthracnose disease. In the pot experiment, it was revealed that incorporation of 60% of PH in to soil would be effective for reducing anthracnose disease of capsicum. Significant improvement of plant diameter was reported in rubber nursery plants when potting media was amended with either PH charcoal or PH ash.

**Conclusion & Significance:** In case of anthracnose disease of capsicum use of PH would be an environmental friendly control measure. The findings open path for future investigations on the effect of different forms of PH for enhancing performance of different plants. Further investigations should be conducted to find the vital nutritional potentials of PH and prevent it disposing as waste.

### Biography

Ruwani Kalpana Jayawardana has experience in using silicon sources both chemical and natural for enhanced growth and disease tolerance in plants. She has a passion in improving plant growth performances by environmental friendly sources and utilizing agricultural waste for improving soil physical, chemical and biological properties. She has contributed to develop a cost effective hydroponic nutrient solution with silicon. In her MPhil research study, she has found that a low cost simplified hydroponic system with paddy husk in the media as effective way of Si nutrition to enhance anthracnose disease resistance in capsicum.

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