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| Title | Effect of Biochar and Fertilizer Application on the Growth and Nutrient Accumulation of Rice and Vegetable in Two Contrast Soils | | |
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| Published Journal Name |  | | |
| Type of Publication | Journal | | |
| Volume | 3 | Issue | 2 |
| Publisher |  | | |
| Publication Date | February 15, 2019 | | |
| ISSN | 2581-365X | | |
| DOI |  | | |
| URL |  | | |
| Other Related Info. | Pages 74-83 | | |
| **Keywords:** Biochar; Fertilizer; Growth; Nutrient; Rice; Vegetables; Tropical Soils | | | |
| Citation: Piash, Mahmudul & Hossain, Md. Faruque & Parveen, Dr. (2019). Effect of Biochar and Fertilizer Application on the Growth and Nutrient Accumulation of Rice and Vegetable in Two Contrast Soils. 3. 74-83. | | | |

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| Abstract |  |
| This study investigated the impact of Biochar and fertilizer, applied independently and simultaneously, on plant growth response and nutrient uptake from two contrasting tropical soils. One commonly cultivated winter vegetable (Amaranthus lividus) and a high yielding rice variety (BR-48) was grown on both the soils. Eight different treatments namely control, only fertilizer, three different biochars (farmyard manure, water hyacinth and domestic organic waste) with and without recommended fertilizer doses were used in the experiment. Soils with biochar treatments received 10 tons ha-1 of biochar. Results revealed that, Biochar treatments alone could enhance the yield of Data Shak 17-64% for Sara soil and 17-42% for Kalma compared to only fertilizer application. Farmyard manure biochar (FM) was most effective in case of Sara and Domestic organic waste biochar for Kalma. Synergistic effect of biochar and fertilizer was most prominent in terms of vegetable yield. Biochar and fertilizer applications had positive effects on N, P, K and S uptake however that varied with soil type. Farmyard manure Biochar significantly increased P uptake in vegetable and fertilizer application facilitated K intake at 1% significant level. Rice straw yield were significantly affected by fertilizer application. Synergistic effect of Biochar and fertilizer treatments increase the yield by 16-23% in Sara and 12-49% in Kalma compared to that of only fertilizer application. Only Biochar application sometimes caused reduction in yield, even from the control treatment. Effect of biochar and fertilizer treatments on macronutrient (N, P, S and K) uptake of rice plant was significant at 0.1% level at both the soils. Fertilized domestic organic waste biochar application facilitated highest N uptake in rice plants both in straw and grain. This highly significant uptake of nutrients could be due to the increased crop yield by biochar and fertilizer application together, which might be the best practice for tropical soils. | |

**Please specify which Sustainable Development Goal (SDG) (s) falls under your research:**

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| Goal 1 | No Poverty | Goal 2 | Zero Hunger |
| Goal 3 | Good Health and Well-Being | Goal 4 | Quality Education |
| Goal 5 | Gender Equality | Goal 6 | Clean Water and Sanitation |
| Goal 7 | Affordable and Clean Energy | **Goal 8** | **Decent Work and Economic Growth** |
| Goal 9 | Industry, Innovation and Infrastructure | Goal 10 | Reduced Inequalities |
| Goal 11 | Sustainable Cities and Communities | Goal 12 | Responsible Consumption and Production |
| Goal 13 | Climate Action | Goal 14 | Life below Water |
| Goal 15 | Life on Land | Goal 16 | Peace, Justice and Strong Institutions |
| Goal 17 | Partnerships for the Goals |  |  |