FUTURE FARMING ENABLING SDG AND AGRO 4.0 IR

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Abstract

Although the safe food demand is continuously growing. By 2050 we will need to grow 70 percent more food. The reality is that very little innovation has taken place in the industry of late – in any case. Four main developments are placing pressure on the legacy agriculture model in meeting the demands of the future: demographics, scarcity of natural resources, climate changes, and food waste are all intensifying the hunger and food scarcity. Agriculture 4.0 will never depend on applying water, fertilizers and pesticides uniformly across entire field. Instead, farmers will use minimum quantities required and target very specific areas. Future agriculture will use different sensors, devices, machines, aerial images, GPS, precision agro, robotics tech, and IT that will be more efficient profitable, safe and environment friendly. Considering these few experiments were conducted at Indoor grow-house of FAB LAB in Sher-e-Bangla Agricultural University to evaluate the development of microgreens produces and evaluation of growth and nutritional profile under different LEDs light combination. The experiment comprised of two factors, viz., Factor Four different crops (C1: Mustard, C2: Lettuce, C3: Broccoli, C4: Radish) and five different levels of LEDs light (White L1: 100; Red L2: 100; Blue L3: 100; Red: Blue L4: 70:30; Red: Green: Blue L5: 70:10:20). Among the different crops, the highest yield got in (108.67gm) was found from C1 and the lowest (78.27gm) from C3. Considering the LEDs light treatment, L2 produced the highest yield (125.67) and the lowest (76gm) was from L1 and L4. Regarding the interaction effect, the highest yield of treatment (251gm) was obtained from treatment combination L2C1 and the lowest (64gm) from L4C1. According to single treatments and treatment combinations C1, L2 and L4C1 performed significantly better in terms of hypocotyl length, chlorophyll fresh and dry weight of individual plants. L4C1 performed better than others for marketable qualities and safety parameter. The highest (1701BDT) and lowest (1344BDT) gross income was obtained from L4C1 and L1C1 treatment combination, respectively. So, combination of red and blue light (70:30) can be economically used for mustard micro-green production.Again, Yield performance of lettuce and pak-choi in hydroponic under rooftop and indoor conditions. Yield contributing parameters and yield of pakchoi at harvest influenced by different LED-light spectral ratios. We also conducted few more IoT based device and developed solar powered agri-machineries combating carbon emissions etc. Agriculture 4.0 is disrupting the system is doable with new technologies.

Keywords: 4 Agro-IR. LED treatment. Indoor farming. Safe vegetables production