DESIGN AND DEVELOPMENT OF LOW LAND POWER WEEDER

R.D.R. Wijekoon¹, M.H.M.A. Bandara² and G.V.T.V. Weerasooriya¹

¹ Department of Agricultural Systems, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka.

² Farm Mechanization and Research Centre, Mahailluppallama, Anuradhapura, Sri Lanka.

More than 3000 species of weeds have been identified all over the world. Weed control measures must be put in place to check the growth and propagation of weeds. Chemical and manual weed control methods are viable alternatives. However, environmental impact of herbicides makes chemical method unsustainable and drudgery limits the size of land of an individual. To increase the productivity per unit area of small land holdings and considering the economic condition of Sri Lankan farmers, it is necessary to have suitable agricultural implements which farmers can use and also allow them to use for custom hiring. Weeding is an important agricultural unit operation. Delay and negligence in weeding operation affect the crop yield up to 10 to 15%. With regard to this, a power operated weeder was developed and tested locally. Various parameters such as speed of travel, field capacity, weeding efficiency, performance index and horse power requirement were considered during the testing. The Front wheel of weeder (590 mm) was fabricated from mild steel flat of 52 x 3 mm. The weeding blades were made from steel flat to impart enough strength to sustain the prevailing forces acting on it. Ushape support made of mild steel was directly welded to the handle to join the front wheel with the main frame. The arrangement was also made to adjust the weeding depth by adding a floater. The weeding efficiency of the developed weeder was satisfactory and it was easy to operate. The developed weeder could work up to 30 mm depth with field capacity of 0.064 ha/hr and higher weeding efficiency was obtained up to 92.86 %. The performance index of the weeder was 15.63. Plants damaged were in zero level.

Key words: Weeder, Field capacity, Weeding efficiency, Performance, Plant damage