

Ditthapong Mitrat 2012: Study on Effects of Residual Mulches on Soil and Water Conservation. Master of Engineering (Irrigation Engineering), Major Field: Irrigation Engineering, Department of Irrigation Engineering. Thesis Advisor: Mr. Somchai Donjadee, D.Eng. 156 pages.

This research focused on the effect of residual mulches to affect soil and water conservation in experimental plots by varying residual mulches namely: 1) vetiver grass 2) sugar cane leaves 3) rice straw and 4) the bare soil. The size of experimental plots was 2 meters width, 22.13 meters length and 2 percent of land slope and soil type was sandy clay. Each experimental plot will be installed with rainfall model at the calibration laboratory and rainfall intensity at 30, 50, and 70 mm/hr Moreover, the end of experimental plot had trough and aluminum collection for calculate of runoff and sediment by weighing and drying, respectively.

The dry residual mulches rate as 400, 800, 1200, 1600 and 2000 kg/rai, were used in this study. The result found that residual mulches can reduce average runoff at the end of experimental plot about 15.32, 29.42, 39.77, 49.68 and 55.15 %, when compared with the bare soil plot. Moreover, residual mulches can reduce soil erosion average about 20.37, 26.72, 32.21, 38.66 and 44.08 %, when compared with the bare soil plot. In addition, vetiver grass mulch, rice straw and sugar cane leaves provide the same performance for conserving soil moisture content. In the experiment, the residual mulches can conserved soil moisture contents more than 21 % when compared with the bare soil plot.

Consequently, residual mulches have no difference statistically significant at 0.05. But the mulch rates have different in a statistically significant at 0.05. It is found that, the higher mulch rate can reduce soil erosion and preserve soil moisture content more than the lower mulch rate. However, for getting a high performance of soil and water conservation. A farmer should select the residual mulches which easily find in the field. Because of it reduce a costs and friendly for environment

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Student's signature

Thesis Advisor's signature