PALMER AMARANTH CONTROL UTILIZING FINGER WEEDER TECHNOLOGY

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Abstract

With the increase in herbicide-resistant palmer amaranth (*Amaranthus palmeri* S. Wats) across the US, weed management has become a problem in cotton systems. Although herbicides can be a good tool to combat the troublesome weeds, over-reliance has led to herbicide resistant weed populations. Organic cotton production systems rely on mechanical weed control as well as hand hoeing in season. Development of the finger weeder system and implementation may help control weeds growing in row that traditional sweep cultivators fail to remove. Field studies were conducted in 2021 at the Texas A&M AgriLife Research and Extension Station in Lubbock, Texas to evaluate the effectiveness of finger weeder technology, traditional cultivation, and an Xtendflex system to control palmer amaranth. Treatments included finger weeder alone, finger weeder with a PPI (trifluralin) and PRE (caparol), sweep cultivation with PPI and PRE, and lastly an Xtendflex system with PPI and PRE. Plots were cultivated four times over the growing season using a either a finger weeder or traditional cultivator on July 6, 15, 23, and August 24, 2021. Plots, 8 40-inch rows by 100 feet, were replicated 4 times. Palmer amaranth was just as effectively controlled without the use of residual herbicides as it was with them when the finger weeder was used. Finger weeder use allowed for effective palmer control decreasing total palmer counts from 77 to 0 weeds per $2m^2$. The standard sweep cultivation treatment with PRE-herbicides allowed for escapes in row (18 plants/$2m^2$). After the first and second postemergence application, the Xtendflex system d 1 plants/$2m^2$. PPI and PRE herbicides followed by the finger weeder provided effective palmer amaranth control. Poor palmer amaranth control was observed in row following the traditional sweep cultivator which required more manual labor to remove weed escapes. Harvest data concluded that there were no differences in lint yield across all treatments. The use of finger weeder technology can effectively control troublesome weed in furrow and row.