Effects of Chemical Weed Control on Root Yield and Quality of Carrots (*Daucus carota* L.)

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Abstract. Three field experiments were conducted during 1993 and 1994 growing seasons, to study the effect of weed control with linuron, metribuzin and their combinations with pendimethalin or propyzamide on root yield and quality of carrots (*Daucus carota* cv. Nantes). Results showed that mixing of pendimethalin with linuron or metribuzin improved weed control without causing phytotoxicities to carrots, while propyzamide mixture did not cause such an improvement. Pendimenthalin mixtures exhibited better weed control, growth of leaves; root yield and quality, marketable roots and higher root contents of ascorbic acid. Although propyzamide mixtures exhibited good weed control, they showed some phytotoxic effects to carrot plants. Both linuron and metribuzin were less effective than their mixtures in weed control and carrot yield. Propyzamide mixtures produced malformed roots, and were phytotoxic to carrot plants.

Introduction

Chemical weed control in carrots may improve crop yield by reducing weed populations, or deteriorate yield through herbicide phytotoxicity to crop plants. Linuron (1 lb/acre) was found to be effective in controlling grassy weeds, in spring sown carrots, but caused some injuries to crop plants although the yield was very good [1]. Incorporation of linuron (6 kg/ha) in the soil (4.8-11% CM), before sowing carrots, had no adverse effects on root yield and quality [2]. Carrots were relatively susceptible to metribuzin [3]. Pre-emergence application of 1.0 - 2.0 lb/acre linuron or 0.25 - 0.50 lb metribuzin provided more than 80% control of *Amaranthus spinosus* and *Portulaca oleracea* in carrots, and up to six weeks after the treatment, metribuzin however, reduced crop vigor [4]. Pendimethalin mixtures with linuron or metribuzin exhibited good weed control, whereas their single applications or their mixtures with pronamide were less in this respect [5].