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HARVESTING BABY CARROTS

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Harvesting Baby Carrots¹

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Preliminary Report

Varieties of carrots (*daucus carota*) are available which produce a small root suitable for canning or pickling without slicing or cubing, and for fresh market sales. The root is more tender and has a different flavour to mature carrots, creating a demand for gourmet foods.

Investigations are to be made into harvesting techniques for this specialty crop. Only one commercial harvester has been located which may be suitable. The Tawco Radish Harvester² has been used to harvest baby carrots. The harvester consists of a belt lifting component and a small root plow which frees the root from the soil and carries the whole plant to a topping mechanism. The topping mechanism is similar in action to the topping mechanism on FMC Scott Harvesters³ which is the most popular method of topping used for mature carrots. Tawco harvesters are available in models from one row to six rows.

In the U.K., a smaller carrot is used for processing than in North America. Roots are canned whole and must be in a diameter range of .75 to 1.25 inches and not more than 3.5 inches long (2). The type of harvester most popular in the U.K. is a digger chain type with a slasher mounted ahead of the digger blade to remove tops. Roots are lifted and cleaned in a similar method to potatoes. This type of harvesting may have to be investigated if belt lifters prove inefficient due to top breakage.

¹Contribution No. 375 from Engineering Research Service, Research Branch, Agriculture Canada, Ottawa, Ontario, K1A 0C6.

²Tawco Division of H.J. Fuller Inc., 1212 Chesapeake Ave., Columbus, Ohio, 43212.

³FMC Corporation, 1224 Kinnear Rd., Columbus, Ohio 43212.

A different type of harvester is available in Holland which uses a vibrating blade followed by a slotted screen shaker to remove soil after digging. These units are available in several different sizes ranging from a small self propelled unit to a large unit mounted around a 4 wheel drive tractor capable of harvesting up to 15 tons per acre. Screens are available with slots from 1/8 inch (3.5 mm) to 1/2 inch (13 mm). Tops must be disposed of before or after harvesting.

Narrow Row Harvesters

New techniques of constructing belt lifter types of harvesters are being investigated by the forestry industry for digging nursery trees for transplanting (3, 5). These machines will handle crops spaced as close as 6 inches while harvesting up to 8 rows per pass. Using these techniques, a belt type harvester could be constructed for narrow rows, but, at present, there is no suitable topping mechanism to work within the confined space.

Cultural Practices

Optimum yields of baby carrots can be expected at row spacings of 4" (4). This spacing, however, does not lend itself to mechanical harvesting. For belt lifting machines such as the Tawco, the narrowest feasible row spacing is 8 inches. However, two rows could be spaced at 2 inches apart on 8 inch centres, giving the same number of plants per acre (1). For bed lifting, the best cultural practice to suit machine harvesting would be a mini-bed, no more than 20" wide with any desired row spacing, or even broadcast sown. Ideally, the space between the beds should be wide enough for a tractor tire to pass to permit a pull behind machine to be used. Some saving of space can be attained by leaving a wide space every second bed only and using a swinging draw bar on the harvester to align for each bed.

Recommendations

Little information is available on how this crop should be handled. Interest in the crop is present from both growers and packers. The Tawco machine should be studied to assess its suitability for both fresh market and processing carrots. If a belt type harvester is not feasible, studies should be made using a digger chain type of harvester which would include a study of topping techniques. Studies are required of plant densities for optimum yield, but these studies must be with consideration of equipment passage to allow equipment into the crop without damaging adjacent rows, and not to create situations where excessive side draft must be placed on the harvester traction unit. The complete project may include a new look at available precision seeders to obtain a suitable seed row suitable for both optimum yield and mechanical harvesting.

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