GROWTH OF EARLY POTATOES
FROM DIFFERENT PORTIONS OF SEED TUBERS
II. YIELD

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Abstract

Several of the recently released early-potato (*Solanum tuberosum* L.) cultivars used in Ontario have produced uneven stands which have been shown to be a result of delayed emergence from basal end seed pieces. A study was conducted to evaluate the effects of seed portions on the yield of three early potato cultivars, Jemseg, Superior and Yukon Gold. Yield of plants from basal seed pieces was lower than that from apical seed pieces or whole tubers for Jemseg and Yukon Gold during several sequential harvests. With Superior, cut seed portions yielded less than whole seed. Number of stems per plant was lower for basal plants of Jemseg. Tubers with strong apical dominance or dormancy such as Jemseg and Yukon Gold are prone to differences in yield among seed portions.

Compendio

Varios de los cultivares precoces de papa recientemente liberados en Ontario han producido establecimientos desiguales que han mostrado ser el resultado de una emergencia retardada de la porción extrema basal del tubérculo-semilla. Se condujo un estudio para evaluar los efectos de las porciones del tubérculo-semilla sobre el rendimiento de tres cultivares precoces de papa, Jemseg, Superior y Yukon Gold. Durante varias cosechas secuenciales el rendimiento de las plantas procedentes de porciones basales de tubérculo-semilla fue menor que el de las plantas procedentes de porciones apicales, o que el de tubérculos-semillas enteros, para Jemseg y Yukon Gold. Con Superior, las porciones de tubérculo-semilla rindieron menos que el tubérculo-semilla entero. El número de tallos por planta fue menor en las plantas basales de Jemseg. Los tubérculos-semillas con dominancia apical o reposo muy pronunciados, como en el caso de Jemseg y Yukon Gold, son propensos a diferencias de rendimiento entre las porciones de tubérculo-semilla.

Introduction

In early potato production where plants are harvested prior to tuber or vine maturity, uneven emergence may reduce yields. In growth cham-

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ber studies, basal seed portions produced much slower emerging plants than apical or whole seed (6). Over a three-year study, uneven stands of Jemseg and Yukon Gold resulted from a 4.6 and 5.7 days delay to 50% emergence from basal portions of seed tubers (7). This delay may result in lower yields.

Lower yields from basal or apical portions of Irish Cobbler (a main season cultivar) followed delayed emergence (3). In another experiment with McCormick, there was little difference (208 vs 216 bu/A) among apical and basal seed pieces. Irish Cobbler seed had well developed sprouts on apical portions and not on basal portions. Well sprouted apical clusters which have little, if any, lateral bud growth are also characteristic of Jemseg and Yukon Gold. Wilson and Murphy (10) found delayed emergence from basal seed portions of Russet Burbank. However, no yield difference was found between apical and basal seed portions. Basal seed tuber portions of King Edward produced about half the number of stems compared to the apical end of the seed tuber (2). Emergence data were not given. Lombard (5) found no difference in yield among apical and basal seed pieces of Irish Cobbler and Green Mountain. However, apical clusters of seed tubers were removed in this study, the comparisons were among lateral buds. Furthermore, seed was cut and suberized to minimize the difference among seed portions and were left to vine maturity. Given reports of lower yields from basal portions in main crop potatoes where plants are left to grow to maturity, it is reasonable to expect that a lower yield could be expected in early potatoes when basal portions are used. For early potatoes, differences in yield among plants from various seed portions might be greater than those reported for main crop potatoes.

The purpose of this work was to investigate and quantify under field conditions whether delayed emergence of shoots from basal seed pieces could result in lower yields of plants arising from basal seed portions.

Materials and Methods

Experimental procedures were outlined in the previous paper (7). Further details pertinent to this work are listed below.

Ten plants were harvested (2.5 m of row) weekly for six weeks in 1985 and eight weeks in 1986 and 1987 commencing on 18 June, 1985 and 19 June, 1986. At each harvest the number of stems and tubers per plant were recorded. Tubers were graded as follows: <45 mm, 46-55 mm, 56-85 mm and 85+ mm. Marketable yield was the total of all marketable tubers larger than 45 mm (Ontario grade for early potatoes). Data were averaged over harvests prior to analyzing using SAS GLM procedures. Three year's data were analyzed to test if the response was similar each year. Years were considered as a random effect for the analysis. Regression of yield on days from planting were calculated and homogenities of slopes com-