

Quinoa Variety Assessment in Eastern Ontario – 2014

Carleton SCIA Major Grant

Purpose:

The purpose of this project was to assess the yield and grain quality of 10 Quinoa varieties grown on 2 different soil types in eastern Ontario. Quinoa is a new crop that has gained a lot of consumer interest as it is considered a health food grain. Varieties appear to perform differently under different growing environments and different soil types. Quinoa is in the same family as Lambs quarters.



Methods:

Small seed quantities of 10 different varieties were purchased from various seed sources in Canada and the USA. In 2014, on-farm variety trial sites were at Shelley and Tony Spruit and at Marty Derks' farm. Ten varieties were planted on Spruit's farm, west of Winchester, and due to lack of seed of 2 varieties, only 8 were planted at Derks' farm, east of Winchester. The Spruit's site is a sandy-loam soil type and the Derks' site is a Clay-loam soil type. The 10 varieties planted were a mixture of seed colour from white to red. The varieties in this trial were: Cherryvanilla, Brightest Brilliant Rainbow, French Vanilla, Mint Vanilla, Oro deValle, Red Heart, Brightest Brilliant (OP) QN100C, KOITO, Temuco and Dave #407. The seed was planted in 30 inch row widths using the Winchester Research Farm plot planter. The plots were planted in 30 inch row widths to allow weed hand control. Urea was broadcast to achieve 120 kg per hectare of nitrogen. Weed control was a pre-emerge 'stale seedbed' application of glyphosate, Assure was applied post-emerge to control grass weeds and a follow up of inter-row spraying with glyphosate to control broadleaf weeds (however, this did not control broadleaf weeds the weeds with-in the row)

Results:

Both sites were planted on 29 May 2014.

Quinoa seed size is very small and it is best planted with a small seed precision planter. Soil type also appears to impact the success of emergence. Note that emergence was less successful on the clay-loam soil type Figure 1 (Derks) than the sandy-loam type Figure 2 (Spruit). This may be due to more drought stress as there was a dry spell just after planting

Figure 1. Quinoa at the Derks site



Figure 2. Quinoa at the Spruit site



Figure 3. Larvae feeding damage on Quinoa Grain in the seed head.



Figure 4. Larvae in Quinoa seed head at the Spruit site 3 September 2014.



During the last phase of grain fill a larvae infestation decimated the variety plots. The plots were hand harvested by cutting and bagging up each plot, but most of the seed was either eaten or badly shriveled. The larvae have been confirmed not to be corn borer, but a positive identification has not yet being determined.

Summary:

Mike Cowbrough, Weed Management Field Crops Program Lead, OMAFRA did a screening trial of a few potential herbicides for weed control in Quinoa. Mike proposed that Assure II & Dual II Magnum be Minor Use Priorities - Quinoa Ontario 2015 (see Figure 5).

Most varieties are either Red or White grains. Lambs quarters has a black smaller seed that can be cleaned from the Quinoa grain/seeds after harvest (see Figure 6).

Figure 5. Quinoa Herbicide Screening – Waterloo trial 2014



Figure 6. Mature Quinoa - Waterloo 4 September 2014



Next Steps:

A second year of this trial would provide another opportunity to assess varieties and soil type interactions. The plan is to repeat this trial in 2015 with a possible 4 or 5 varieties from the Simcoe Research Station.

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Location of Project Final Report:

Crop Advances, Ontario Soil & Crop Improvement Association at:

<http://www.ontariosoilcrop.org/en/resources/cropadvances.htm>