

**EFAO 2021: Research Protocol**

## **Quinoa screening trial**

**Farmer-researcher(s): Dean Orr, Mill Valley Farm - Central**

**Project type: Screening trial**

**Research priorities: Seed selection, production and breeding**

**EFAO Contact: Dillon Muldoon, [dillon@efao.ca](mailto:dillon@efao.ca)**

---

### **Objective**

To narrow down varieties of quinoa for organic production in southern Ontario.

### **Background**

Quinoa appears to be a very accessible grain for direct marketing to consumers, as consumers generally use unprocessed Quinoa in meals. Even more, the crop appears to be relatively well suited for growing in colder North American regions, such as Ontario. Challenges appear to be seed availability, as well as access to regionally adapted varieties.

### **Experimental Design**

#### **Varieties**

Brightest Brilliant Rainbow (commercial standard)  
French Vanilla  
Cherry Vanilla  
Buffy  
Red Head  
WGS Oro de Valle - added May 2021

#### **Field layout**

Dean will mark rows using his 12 row planter ahead of time and plant the quinoa using a Jang push seeder.

He will plant five replicates of each variety as follows: UPDATED MAY 13

## EFAO 2021: Research Protocol

	Rep 1					Rep 2					Rep 3					Rep 4					Rep 5								
120'	F	R	C	R	B	O	R	C	B	R	F	B	O	R	C	F	R	F	C	R	R	B	O	C	F	B	R	R	
	r	e	h	a	u	D	a	e	u	e	r	e	D	e	h	r	a	r	e	h	e	u	D	e	r	e	u	e	e
	e	d	e	i	ff	V	i	r	ff	H	e	ff	V	H	e	e	n	n	e	n	b	H	ff	V	e	r	ff	n	H
	n	H	r	b	y	w	b	e	y	a	D	e	V	e	r	h	c	c	h	o	w	a	y	w	D	e	a	b	a
	c	a	r	o			o	r		d	o			d	r	o	h	o	o		d	o			o	o	o	o	o
	h	d	r	w			w	r		a	o			a	r	o	o	o	o	o	w	a			o	o	o	o	o
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'

With the leftover seed, Dean will plant side-by-side plots (~15'; 6 rows at 30') to look at different timing for rotary hoeing including 3 days pre-emergence, at emergence, 3 days after emergence. He will collect observational data for this question.

UPDATE June 2: Dean calculated the square footage of the planned plots and it worked out to a half acre. He has enough seed for 1+ acres, so he will run the plots to 120' long instead of 60'.

## Measurements for each variety

### Vigour & Hardiness

Dean will measure vigor and hardiness by taking observations throughout the season. He will compare each variety across replicates and assign a rating (e.g. 1 poor; 5 excellent).

### Emergence & Maturation

Dean will mark the dates when each plot has approximately 10%, 50%, and 100% emergence (beginning of season) and maturation (end of season).

### Yield

Dean will harvest all varieties close to maturity to avoid head sprouting. Dean will harvest and weigh each of the **15 plots separately** using CaseIH 8120 Combine, and will collect the seed with seed bags from right under the elevator, to avoid it having to go to the grain tank. He will weigh by either using a digital bathroom scale or a digital hanging scale. He won't clean out the combine between plots, and will assume uniform carryover from plot to plot. Depending on the moisture of the grain, Dean will re-evaluate if he also wants to dry and re-weigh.

## EFAO 2021: Research Protocol

### Photos

Dean will take photos of each variety throughout the season.

### Research Plan

Time	Task	Methods & Measurements or Action Item
Mid-Late May	Plot layout	Lay out plot with planter at time of soybean planting (remember to unhook the meters!)
Mid-Late May	Planting	Follow row unit marks as per above with Jang seeder.
Daily from planting to 100% emergence, and minimum weekly after, probably sooner.	Observations	Observe for % emergence, and comment on vigour.
As needed for weed pressure/ drought.	Management	Possibly rotary hoeing, definitely scuffling. I would expect to scuffle 2x during the growing season, perhaps 3 depending on how good the quinoa is at filling the rows. I may hand weed if weed pressure is looking to significantly affect yield, or if the canadian thistle looks to be significant. That would make harvesting difficult.
Daily from 1st september on. The articles I have read have been very open ended for the timing of maturity, so I will have to keep an eye on them.	Observations	% Maturation for each plot
At maturity. Late Sept - early October	Harvest	Each plot separately; can't leave in the field too long after maturity (to avoid head sprouting)
Within 7 days of data collection.	Data submission	
December 31	Invoice	Send Sarah invoice for farmer-fee and any remaining expenses

## EFAO 2021: Research Protocol

\*Please note that if data is submitted after the submission deadline, EFAO staff cannot guarantee that your data will be analyzed and written up before the Research Symposium and/or the next growing season.

### Staff check-ins

Monthly

### Materials

Please list all materials, supplies and equipment that will be reimbursed for this project. If possible, please also indicate a short-list of any in-kind materials, supplies and equipment that you will use.

Material	Unit	Quantity Required	Total Cost*	Note
Quinoa seed			~	
Jang seeders	\$40	3	\$140	\$20 shipping
Bags, etc for keeping yield separate				
Stakes or flags				
Screens for Allis Chalmers All-Crop 72 combine				Added May 11
<b>Total</b>				

### Farmer-fee

\$500 in 2021, invoiced to EFAO after farmer-researcher submits data.

### Invoices for Farmer-Fees & Reimbursements

#### Research expenses

- Email an invoice along with copies of receipts for all qualified expenses to **research@efao.ca**.
- Expenses can be claimed anytime throughout the year.
- Deadline: December 31, 2021

## EFAO 2021: Research Protocol

### Farmer-fee

- Email an invoice for your farmer-fee to **research@efao.ca**.
- Farmer-fees can be claimed after your data is submitted
- Deadline: December 31, 2021
- If you collect HST for your farm business, you can choose to add HST to your fee.

### Memorandum of Understanding

You agree to keep an active membership with EFAO throughout the duration of your trial.

<https://form.jotform.com/210625202854246>

To check the status of your membership, log in here:

<https://efao.z2systems.com/np/clients/efao/login.jsp> or contact Martina, [martina@efao.ca](mailto:martina@efao.ca).