A Canadian network of variety trials for open-pollinated Napa cabbage and spinach

Helen Jensen, PhD

USC Canada, The Bauta Family Initiative on Canadian Seed Security

Seeds of Diversity

USC CANADA

THE BAUTA FAMILY INITIATIVE ON CANADIAN SEED SECURITY

THE W. GARFIELD WESTON FOUNDATION

Open-Pollinated varieties and seed security

Background

- Reliance on hybrid vegetable seed is an obstacle to adaptation, diversity, and seed security
- Lack of information on OP performance in market gardens
- Limited number of varieties available in bulk quantities

Approach

- Work with seed producers and market gardeners to trial OP varieties for market qualities and seed production in Canada

Open-pollinated varieties

EUPHYTICA

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THE PRESENT POSITION OF SPINACH BREEDING

J. SNEEP

Although in the thirties attention was paid to the breeding of hybrid varieties in Germany, this section of the breeding programme has only in the last years received much interest.

What is a variety trial?

- Starts from a specific goal or need (e.g. cold tolerance, flavour, slow bolting.
- Targeted: Documents qualities of interest, rather than all aspects of plant
- Ultimate goal is varieties for market production

Step 1: Consultation

To determine species

- Informal conversations with growers during first year of program
- Informal discussions with program coordinators and advisors

Verdict: OP varieties of spinach and chinese cabbage for market gardens

To determine specific goals

- Semi-structured questionaire with participating growers

Spinach:
-Slow bolting, 3 + cuttings prior to bolting, good bulk, spring-summer production

Chinese cabbage:
-Big and uniform head formation, reduced bolting, spring-summer production

Step 2: Seed Sources

Public gene banks (4)

Commercial seed companies (15/31)
(Canada, US, Europe)

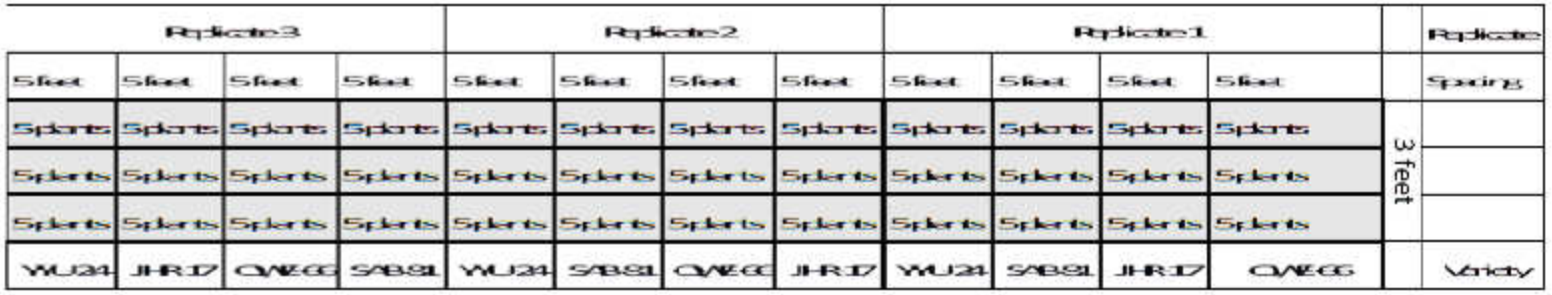
Varieties	Spinach	Chinese cabbage-
No. from gene banks	10	32
No. from seed companies	14	20
Total varieties	24	52

Step 3: Design

- Check varieties
  - 1 standard OP and 1 standard hybrid per trial

Step 3: Design

Layout: Pre-assigned and replicated



Account for differences in conditions along the bed

Step 3: Design

Blind Trials

“It’s good that I don’t know which is which, if I knew which one was the hybrid, and it was looking better than the others, I’d probably find a way to knock it down a few points”

-Kim Delaney, Hawthorn Farm, Ontario (Spinach trial)

Replicate	Variety Code	Date Planted	Date of Seedling emergence	Date of maturity
1	QPH-99			
1	ETT-62			
1	ZGJ-20			
1	ACS-78			
1	SKD-42			
2	ZGJ-20			
2	ETT-62			
2	SKD-42			
2	QPH-99			
2	ACS-78			
3	ACS-78			
3	QPH-99			
3	ETT-62			
3	ZGJ-20			
3	SKD-42			

Step 3: Design

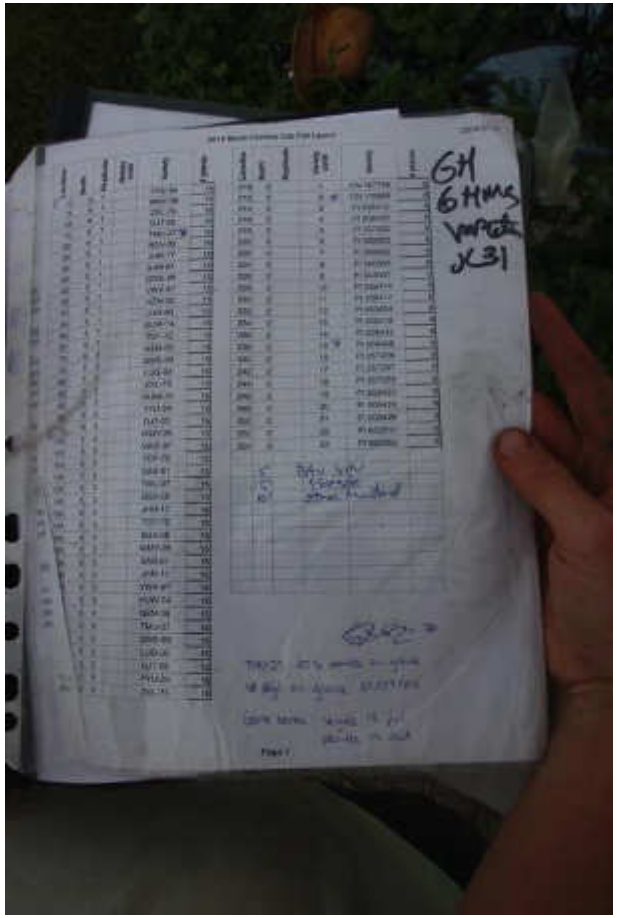
Evaluated based on farmer practices and priorities

Number of cuttings for spinach-evaluated for ½ of each replicate

"No farmer in their right mind would harvest spinach that way"

-Gilberte Doelle, Nova Scotia

Step 4: Implementation



Grower support

- Seeds provided
- Trial kit
- Communication
- Compensation
- Field days

Sites in 2014

	Spinach	Chinese cabbage (head type)	Chinese cabbage (loose leaf)
No. sites	9	2	2

Spring-Summer trials:
Ty and Janice Shelton, Alberta
Aabir, Everdale, Ontario
Kim Delaney, Hawthorn Farm, ON
Dan Brisebois, Les Cèdres, QC
Gilberte Doelle, NS

Fall-Winter
Ty and Janice Shelton, Alberta
Aabir, Everdale, Ontario
Kim Delaney, Hawthorn Farm, ON
Dan Brisebois, Les Cèdres, QC
Gilberte Doelle, NS
Moss Dance, BC
Susan Davidson, Glorious Organics, BC
Saanich Organics, BC
Hanna Jacobs, Matchbox Garden, ON
Amy Cheng, Everdale, Black Creek, ON
La Société des Plantes, QC
Charlotte Scott, QC

Dan Brisebois and Bauta Seed Intern Sophie Descoteaux

Chinese cabbage (Brassica rapa ssp. Pekinensis) at Ferme Tourne-Sol, QC

Chinese cabbage trials

Spinach trials

QPH: Monstrueux de Viroflay (West Coast)
ETT: Buterflay (HMS)
FYS: Tyee (Veseys)
ACS: Longstanding Bloomsdale (HMS)
SKD: Verdil (Adaptive)

Step 5: Evaluation of varieties and of trial methodoloy

Overall Fall Trial Results

	ETT-62	QPH-99	ACS-78	SKD-42	FYS-80
Oct. 24th					
Sept. 25th **	Semi-smooth; Spreading/low	Smooth; Slightly upright	Savoyed; Slightly upright	Smooth; Spreading/low	Savoyed; Spreading/Slightly low
Yields (g)	277	328	310	715	901
	272	454	594	711	617
Total	549	782	904	1426	1518
Flavour	Even milder than QPH; Flavour 5; Tougher than QPH; Texture 7	Mild; Like it; Flavour 7; Slightly tough; Texture 7	Best; Flavour 7; Texture 9	Best; Flavour 9; Texture 9	Milder than ETT; Flavour 5; Texture 5
Overall	Not noteworthy.	Good for processing – seems to be more fibrous (less water content)	Good taste.	Best taste and high yields	High Yields but inferior taste and texture.

**Leaf type and growing habit changes in fall/cooler temperatures: smooth is more savoyed and growing habit is less marked.

***Insect damage and fungal damage is comparable for all (7 insect damage on 1-9; no fungal damage).

OP variety trials-Chinese cabbage

Step 6: Plan for 2016

- Follow-up and check-in with participants
- Refine methodology
- Identify priorities (breeding, repeat trials, new varieties, new crops)

Thank You!

- All participating growers
- Bauta regional coordinators
- USDA, AVRDC and PGRC gene banks

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