

**2017 ACORN Conference & Trade Show**  
**Best Western Glengarry - Truro, NS**

**Workshop Title:** Know your varieties: Effective on-farm variety trials

**Speaker:** Dr. Stefan Gailans, Research & Field Crops Director for Practical Farmers of Iowa (PFI). He runs cooperators program (on-farm research):

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**Executive Summary:** Farm-run variety trials have proven very effective for motivated producers. In designing proper and controlled experiments, trials have provided answers to many questions regarding production, including cover crops, beginning farms, field crops, livestock, horticulture, local food, on-farm energy, policy, small grains, and research and demonstrations.

- PFI is a vehicle for conducting on-farm research: replicating strip and plot trials.
- Data and results are available online.
- In 2017, 51 cooperators carried out 69 on-farm trials.

**Detailed Notes:**

Two documents accompanied the presentation, Horticulture Research Protocols from Practical Farmers of Iowa:

- Summer lettuce variety trial with parameters and results
- High Tunnel Tomato Variety Trial, year 2 with parameters and results

Scientific Method: hypothesis > experiment > results > conclusions > repeat (cyclical)

On-farm research trials are often determined by asking “what are you curious about?”:

- Farmers are curious about observations made on farm.
- They ask questions about production practices.
- They set project design and parameters.
- They collect and record data.
- They share results and learn!

Practical Farmers of Iowa: farmer-lead and directed non-profit. They serve Iowa and the Mid-west. A shared vision of diverse farms, vibrant community, and healthy food since 1985. They hosted 33 field days last year.

Values:

- Welcoming everyone
- Creativity
- Collaboration and community
- Stewardship and ecology

PFI membership includes: 55% hay growers (most) down through 21% hog (least);  
3000+ members

Program areas include:

- Field crops
- Cover crops
- Livestock
- Horticulture
- Beginning farmers
- Land transfers

Annual Conference: Jan 19-20 in Ames, Iowa

PFI Mission: Strengthening farms and communities through farmer-led investigation and information sharing.

Working meeting every year: Farmers present identifying knowledge gaps and new projects and then implement on-farm trials to attempt to fill the knowledge gap.

Designed Experiments:

- Treatments applied to experimental units
- Data collected from experimental units
- Inferential - cause and effect

Planning:

- Is it practical and feasible in terms of equipment, cost, precision, and time?
- What to measure? Important responses to your treatment.
- Practical considerations include:
  - Ease of measurements
  - Accuracy and precision
  - Cost

A good design is replicable, random, and controlled. Take good records!!

A trial very often starts with a question that needs an answer - cooperators/farmers have a vested interest in the experiment. Consult other sources of info for trials and results that may already be available (universities, peers, seed companies (industry), etc.).

Example: 5 farms doing bell pepper trial (2015)

- Olympus variety lacked growing info in the seed catalogue
- Designed field test
- Harvest, weighed, etc. separately
- Conclusion (or more questions!)

T-test: A t-test's statistical significance indicates whether or not the difference between two groups' averages most likely reflects a "real" difference in the population from which the groups were sampled. Analyze two means: to represent the population of treatment; variants of means; analyze whether means of the population are different.

Trial reports available free online: [practicalfarmers.org](http://practicalfarmers.org)

Founder (Dick Thompson and his wife) did 60 trials on their farm and were motivated by the fact that, "You can't buy answers in a bag".

Q - Is compensation given? Are there contracts put in place?

A - Yes compensation given is \$550 offer/trial, and it is often donated back; contracts are signed but are not very stringent and are not a binding agreement.

Q - How is the organization funded?

A - Annual member dues (\$50/yr individual, \$60/yr farm, \$10/yr students); grants and government funding.

Q - Have different strains of same varieties provided different results? (i.e. lettuce saved on farm vs same variety from a local farm)

A - There is not enough data to know, especially considering labour, wages, weeding, etc. considerations year over year; seed saving has started to bubble up; wheat/oats/rye being saved and used for a cover crop.

Q - Is crop history and soil prep included in trials?

A - Yes, background data is included.

Q - How do you avoid bias? Blind test?

A - No, most trials are self-motivated by producers looking to solve problems or get answers. They are coached on good experimental designs before beginning the process.

Q - With vegetable growers in the network, is taste ever assessed?

A - Qualitative data is included, perhaps more anecdotally - taking taste, popularity, and quality into consideration.

Q - Are there guidelines for plot size?

A - No, trials are based on farm and equipment and what can be handled, maintained, recorded, and controlled.

Q - Will a trial required multiple sites?

A - No, but it is desirable.

Q - If a variety is going off the market, does that often inspire trialing?

A - It hasn't come up.

Q - This is a good program - is there another similar state organization?

A - No. Ecological Farmers of Ontario is doing similar things.

Q - Have there been any outstanding results reported to date?

A - It depends on the farmer. Field crop growers: conventional growers seeing a reduction in weed pressure - finding less resistant weeds; spraying less often. Happy farmers!

Q - Is there a tendency to work with varieties that work well in certain a climate?

A - Yes, but regionally specific. Iowa/Maritime climates are not comparable. However, drought resistance vs wet can be compared. Trials are starting to add more control factors and note weather, etc.

Q - Vancouver: Varieties trials last year included golden beets, kale, spinach, now spin, carrots, and beets; 2 years back to back. Growing 33 varieties of good over-wintering leeks. BC Seed Trial at UBC (Mel Sylvestre). Bauta Seed Initiative is nation-wide trials looking for breeding consultation on vegetables.