

**Workshop Title: Strawberry Season Extension Techniques: “Lessons Gained in Quebec”**

**Speaker and their title:** Gerard Thebeau (P.Ag), New Brunswick Department of Agriculture, Aquaculture & Fisheries

**Executive Summary:** Season extension has many advantages, including the fact that you can get a better price for the berries and can spread out labour. Some of the systems are not well suited to organic growing, due to higher pest pressure, but there are great organic options.

**Notes:**

**Matted Row system is the traditional system for strawberry growing.**

- use dormant bare roots
- single rows planted on bare ground, 60 inch spacing
- you do not harvest during the establishment year
- 2-3 harvest years with renovations

Advantage: lower cost to others. Well adapted to u-pick. (People are used to picking strawberries in July)

Downside: labour is expensive as strawberries are hard to find. Everyone has strawberries at the same time so prices tend to be lower.

Uses late to short day cultivars. Can increase earliness of harvest with floating row cover.

Can harvest 8 to 10 Ha in first harvest year. Yields usually go down afterwards.

Pests are a major headache, because it's a long term system.

Can't harvest in the first year.

Long period before return on investment. System is often used where land is plentiful.

**Why we should consider season extension:**

New markets to be had due to longer season.

Better use of labour throughout season.

Quicker return on investment.

Fewer pests (weeds, insects and diseases)

Better land utilisation (don't have a year where you can't harvest)  
Better money due to off-season markets.

Can do season extension using the following tools:

- 1) Cultivars (earlier or later). Can vary season that way.
- 2) Plant seedling types
- 3) Short day vs day neutral
- 4) Growing systems.

Select and combine season extension tools to find system that works for you.

**1) Cultivars**

- early or mid season
- adapted to different climates and soils
- different characteristics (taste, firmness, etc)

**2) Plant seedling types**

- Dormant bare root plant: Most common. Dug up late in fall or winter. Stored in a fridge and you can order it when you need it. 10 to 12 cents a plant.
- Fresh plug plants: Cuttings that are harvested from daughter plants of a strawberry plant. Advantage: have a better take than bare root. Provide higher yields and earlier harvest. Double the price.
- Dormant plug plants: Same as fresh, but are dormant, have been kept over winter. Organic plugs aren't available. A little more expensive for dormant.
- Large, fresh dormant plants (trayplants): Advantages: earlier, bigger yield potential. 55 cents a plant.

Plug Sources: none in the Maritimes. Most in Quebec or Johnny's.  
Bare root plants are available in NS.

**3) Growing Systems**

- Bare ground (traditional)
- Raised beds plasticulture (high density)
- Floating covers (low and high plant density)
- Unheated caterpillar and high tunnel systems
- Heated greenhouses

**4) Day Length**

- Short day strawberries (used in matted system) Plants that produce fruit buds when days are short or when photo periods are 13 hours or less. Fruit buds produced in less light and colder temp. Produce daughter plants when days are long.
- Day neutral

**Most Commonly used season extension systems:**

Matted row system: use bare root plants on bare ground and rows are filled in June. Fruiting buds are produced in the fall (establishment year). Can use a floating cover to extend this season. In this system, you're limited to having a harvest concentrated in late June or mid July.

Plasticulture techniques: Raised bed. Machines will lay out plastic and drip irrigation and will water the plants. Other less mechanized systems where you have to do it in several steps.

System: Fresh Plug Plants/short day varieties/plasticulture. Make an 8 inch hill and plant fresh plugs in early fall (mid Aug to Sept). Early planting means more yield but later crop following year. Later planting: less vegetation, less yield, but earlier crop the following year. You can use biodegradable plastic (be careful not to put it too early as it might degrade early). All fertility needs to be incorporated in before making the beds.

When first frost is forecast in fall, add white floating row cover. This will extend fruit initiation period. Leave floating row cover until heavy frost is forecast, remove floating row cover and apply straw, and then put row cover over straw. In early spring, remove straw and put between rows, and put floating row cover on again until 10 per cent bloom to allow bees to come in. Some people will bring bees in because it's early in the season and natural bees might not be around.

Harvest: early June, 4-5 week period. Two to three weeks before matted row. Can expect 10-15 tonnes per ha.

For organic production, will start after one harvest and then turning it over and using land for other crops.

System: Renovation for Short Day/Plasticulture/Fresh Plugs - With few weeds

Stop fertilizing close to end of harvest (let runners run down mother plant). Mow once harvest is done, just above crown hearts. Will discourage runners.

Remove any runners that are produced just before fruit bud initiation at end of August. With this system, you're not using the floating row cover, just regular straw.

With a lot of weeds: Stop fertilizing close to end of harvest. Address weed problems before August 10. While weeding, cut old foliage with pruning shears (labour intensive) to about 5 trifoliolate leaves. This technique requires 1000 hours labour/ha, but will get an extra 5 tonnes per ha compared to just mowing.

Remove runners at end of August.

Next spring, remove straw. Frost control with row cover or irrigation. Second harvest will not be as early as first, but will be earlier than conventional system. 10-12 tonnes/ha, acceptable fruit size.

In Quebec: favourite cultivar is Clery

If you're going to get plants from a nursery, have to order almost a year ahead of time.

Short day cultivar possibilities: matted row or plasticulture.

### **Day Neutral Strawberries**

Day neutral can produce flowers continuously, doesn't matter about day length. They will form fruit any time, as long as temp is favourable. Produces less runners than short day. More suitable for high density planting (plasticulture).

System: Fall harvest using plasticulture, bare roots, day neutral, spring planting.

Plant as early as possible using bare root plants (usually early May).

*Few organic grower using this system because of pest issues in fall.*

Produce a harvest during fall after spring planting. Will seldom keep plants for more than one year.

Overhead irrigation used for frost control.

Crop picked by pickers because you do not want people walking on plastic, thus, doesn't work for upicks.

60% of harvest done between Aug 10 and Sept 10.

Harvest 20-30 tonnes/ha is possible.

Never leave contaminated fruit in field.

Windbreaks are useful.

Supplemental bees are recommended.

Use straw between rows.

Cost is way more than matted row.

Less weeds because of plastic and straw between rows.

Fewer insects, due to better ventilation between rows.

Tarnished plant bugs and gray mould can affect yields.

*Tough to do organic with existing tools.*

System: Plasticulture/Day Neutral- fall planted/fresh plugs

Plugs planted in Aug-September. Floating covers for frost protection and straw for winter protection.

Early harvest. Up to 15 tonnes/ha of great quality.

Early harvest in June, then have a dormant period until late July til mid October, then you'll get another harvest. Might get 15 tonnes/ha of medium quality fruits in the fall.

### **Comparisons:**

Matted Row:

Better for upick

Smaller investment

Longer time to get money back

More pest pressure  
Land tied longer  
Less technical

Plasticulture:

Easier picking, reducing labour by as much as 50%. Fruit is easier to find and it's higher off ground.

Better price

Higher yield.

Lower pest incidence for some pests.

Quicker return on investment.

Higher investment required.

Better land use is possible. (can use land in Spring).

More technical than matted row.

**Plasticulture Comparisons:**

Early Harvest/short day plugs/fall planting

Less pest pressure. Possible to do organic system with one harvest.

Fall harvest/day neutral/bare roots/spring planting

Organic production is very difficult (more pest pressure).

**Take home message:** Many tools available to different growers.

Plasticulture will help deter weeds, however all fertilization happens up front.

Row covers for season extension, helps deters pests. However, must be removed at bloom time.

*Day neutral not compatible with organic production.*

Can add to tools with high tunnels, heated or unheated.

**Marketing:**

Best for roadside stands (not upick).

Best to market products near big centres.