Tree Fruit Symposium

Speaker & their title: Ken Taylor, Green Barn Farm (QC)

Executive Summary

The Tree Fruit Symposium consisted of a three-part presentation from Ken Taylor of Green Barn Farm. Taylor's talk was broken into three sections (Transitioning to a Diverse Orchard, Designing/Planting the Orchard, and Orchard Interventions) with the strongest emphasis being placed on orchard diversification and reducing inputs and interventions in orchard crop production.

Ken began by underlining his intent to inspire people to plant fruit trees, to diversify their tree fruit production, and to try something new. To that end, he began by holding up a specimen of North America's largest native fruit- the paw paw. Most members of the audience were not familiar with this fruit.

Ken does not necessarily think of an orchard in the traditional sense of apple, pear and common soft fruit trees. For Ken, an orchard is simply a perennial crop that gives food. This food can grow in the form of ground covers, trees, or shrubs. Orchards can provide carbohydrates and proteins. Nuts, for example, are orchard fruits.

Nuts are an excellent source of protein and a good market expansion commodity. 100% of the world's supply of pine nuts comes from China. We can grow pine nuts here. Ken is also very interested in oak trees as a possible protein source. The problem is that acorns are extraordinarily bitter. This problem can be circumvented by soaking the nuts in water for several months, as the First Nations peoples did.

Other nuts of interest include the English walnut, and heart nut. English walnuts do not grow easily in the Maritimes and it would be necessary to toughen up the genetics, perhaps by crossing it with a hardier species such as a heart nut. Heart nuts have good flavour and are easier to crack than black walnuts. Ken has hardied his heart nuts up enough to sustain zone 1 winters (-40 C).

Workshop Title: Transitioning to a Diverse Orchard

[Slide: What Food to Grow]

Ken recommends growing the ABCs:

- -annual crops
- -beastie crops (milk, eggs, meat etc)
- -continual crops like fruit, nuts, berries

Put the C in first, and then add A and B.

[Slide: How to Grow it]

Ken started out with 3,000 conventionally grown apple trees and slowly transitioned to a more diverse and less needy orchard. Ken now practices what he calls “freedom farming” or farming with as few inputs and interventions as possible. The goal of freedom farming is to create the most profit possible while lowering inputs and reducing interventions.

Below are key practices and concepts to consider when transitioning from conventional orcharding to “freedom farming”:

Most conventional fruits are not “from here” and so they are not very well suited to our growing conditions. The bosch pear, for example, freezes easily and is very susceptible to fire blight. So instead of going to great lengths to try to protect and coddle an unsuitable pear, Ken suggests intervening with the plant on a genetic level to create a more hardy variety. Making sure you have the right genetic stock is something that is more fundamentally important to your success than what growing method you will use (conventional, permaculture, organic, etc.)

Selecting the right genetics is the first step to “freedom farming.” Breeding new varieties is also a good way to make trees more suitable to specific growing areas. Breeding better or new genetics can drastically reduce the number of interventions a grower has to make in an orchard without changing the consumer’s experience of their favourite fruits in any major way.

Fruit tree farming can also be made more efficient by switching from row-cropping to guilding. Guilding refers to the practice of growing multi-layer orchards that include understories such as annual plants, perennial shrubs, and vines that can climb up on tree species. Guilding allows farmers to make more money off of a smaller space, especially if they are growing items with a high profit margin.

Custom designing trees by choosing separate root, interstem, and fruit stock, is another way to increase orchard productivity without increasing interventions. Choose a root stock that suits your soil type. Select for size by “interstemming” and then select fruit for taste and hardiness. This method requires more work in the beginning, but your trees will be much more efficient producers than cookie-cutter, commodity trees.

Finally, the last key to successful orchard farming is to focus on $$ / acre instead of yield per acre. Figure out which crops will make you the most money with the least inputs. Yield per acre is an old fashioned concept.

The next section of the presentation provided a visual overview of different varieties grown on Ken’s farm (see power point notes for details.)

[Slide: Love this Fruit] (image of paw paw)
Ken doesn't know yield per acre or revenue because there is currently no market for paw paw. He doesn't sell them because the seeds are too valuable to bother selling the fruit. His paw paws have been genetically selected for their hardiness to his -40 C winters outside of Montreal, QC.

[Slide: Pretty Flowers to Delicious Fruit] Paw paw has a beautiful dark, blood red flower, but the flowers are poorly designed. The flower hangs downward, hidden from pollinators. Also it smells like rotting meat. Blue bottle fly is the best pollinator because of the scent of the flower. The tree requires a fair bit of hand pollinating.

[Slide: Northern Banana- Pawpaw] The paw paw fruit is always good with no insect damage, nor any foliar damage to the tree. US research into paw paw leaf extractions has revealed that the leaves contain a natural insecticide. The plant has also been shown to have anti-carcinogenic properties. The flesh stays yellow when frozen (doesn't brown), which is indicative of high antioxidant levels.

[Slide: image of loaf] The paw paw fruit tastes like a cross between a mango, a banana and an apple. It also has the nutrient density of 100 g of each of these fruits combined. The fruit is very dense and filling.

[Slide: Shipova] The shipova is a little known fruit discovered by a Russian plant breeder in 1650. It is a wild fruit. Note that most of our popular genetic fruit crops were *discovered* in the wild rather than created. For example, the red delicious apple, the mother of gala, honey crisp and other modern favourites, was originally a wild apple.

The shipova tastes like a sugar pear and has a flattened pear shape, but is not a pear. It is a cross between a mountain ash and a pear. So far there has been no success at getting these two species to cross in a lab.

[Slide: Persimmons - #1 in world consumption] Most of the commercially supplied persimmons are now seedless. North American persimmons are smaller than the Asian persimmons, but more hardy. They are very astringent if you pick them before they are ripe.

[Slide: image of bowl of quince] There are two types of quince – Japanese and European. The Japanese variety is mostly grown for the ornamental nursery trade and has a smaller fruit than the European quince. Ken has been developing the genetics of Japanese quince to yield larger and larger fruits. There is currently no North American commercial quince production.

[Slide: Try Taylor Apple-Pears] Apple-pears are an excellent orchard fruit because they appeal to both apple and pear lovers, they store well, and there is no real domestic production or competition for this crop. The stats on Ken's apple-pears are as follows:

$3/lb x 150 lb/tree x 200 trees/acre = $90,000/acre (150 is conservative. $90,000 may not be realistic, but it is intended to be an inspiration of what is theoretically possible)

For contrast:
1000 acres of corn = $250,000
1000 acres of Taylor Apple Pears = $90,000,000

[Slide: European Pears Northbrite] Northbrite is an improved European pear. European pears store well and are disease resistant and easy to maintain. Commodity pears are very difficult to grow here and European pears are a good alternative.

[Slide: Apples -$95 M grown in Canada] The traditional apple need not be overlooked, but do experiment with different flavour profiles. You can charge more for special varieties and people don't mind paying for new flavours. Apples are the #1 orchard crop in Canada but we still import 110-120 million apples a year. We only grow 95 million domestically. There is a domestic market here, ready for new varieties. Try growing apples that look different (e.g. red-fleshed apples such as Wonder Red or Purple Passion).

[Slide: Seedless Table Grapes] The #1 food import to Canada is table grapes. There are no major table grape producers in Canada. Experiment with this crop and the wonderful world of value-added grape products, such as pies and preserves. Grapes do better as single layer plantings than in mixed layer agro-forest scenarios.

[Slide: Kiwi grapes anyone?] Kiwi grapes are a hardy kiwi that grow anywhere, including scrubby soils and full shade. They can withstand -30 C winter temperatures and the fruits have a low water content, which prevents them from going bad in the cold.

[Slide: Plumcot- better than plums!] Plums are very susceptible to black knot, but if you cross a plum with an apricot you get the black knot resistant benefits of the apricot. Plumcot flesh is more like an apricot than a plum.

[Slide: Chum pie- better than Plum?] Chums are crosses between cherry and plum. They have cherry stone and plum-like flesh.

<u>Workshop Title: Designing/Planting the Orchard</u>

[Slide: Time to grow all of our food on trees . . . fruit, nuts, berries, etc] Ken recommends designing however you wish, but implored the audience to ask themselves what imported fruits Canadians are buying and to tap into new domestic markets.

Canada is an immigrant nation. The world is globalized. Canadians don't just eat apples anymore.

[**Slide: Tree portfolio (example)]** When designing your orchard, consider having a full "portfolio" of fruit crops. For example:

-strawberries as ground cover (June)
-raspberries (mid July)
-plums (August)
-grapes (early September)
-heart nut (late September/October)
-grow food that stores for consumption and sale during the winter

[Slide: Guild me!!] Permaculture guilding means that you plant something in the ground, something on the ground, something higher up, a shrub, then something higher up a tree, then a vine – all in same place, creating a natural growing system.

Cherry olives are a good guilding tree because they are very self-sufficient and can grow in full shade, full sun, poor soil and drought conditions. Their flavour is quite astringent and the fruit is small and time consuming to process. However, they require no pruning, spraying or fertilizing because they fix their own nitrogen. Ken plants cherry olives around bases of nut trees to provide the nut trees with nutrients and to prevent other things from growing there.

Workshop Title: Orchard Interventions

[**Slide: Freedom Farming]** Always consider the damage that interventions may cause. For example, spraying kills beneficial insects and organisms. Spraying also costs a lot of time and money, and may not always be effective. Hand the responsibility back to nature. Let nature select what will do well and what will fail.

Ken does not believe in irrigation, finding it to be more hassle than it is worth. Fertilizing should only really be done at the beginning of a plant's life. Generally, fertilizing is overdone. Row covers are a good way of maintaining soil fertility. Guilding also helps to maintain soil quality because leaf litter returns organic material to the soil and deep rooting plants and trees bring nutrients up from deep down.

Conventional knowledge is that fruit trees need to be shaped and pruned for optimal performance. If you are going to prune, remember that you will have to continually work and intervene to maintain the tree in that shape. Perhaps it is more efficient in the long run to let the tree grow how it wants to grow. Most bush fruits don't require much pruning.

Ken recommends Mark Shepard's STUN orcharding (Sheer Total Utter Neglect). STUN orcharding is similar to Ken's "Freedom Farming": stop controls, stop interventions, set the orchard free and let nature select what will survive. The goal is to create a food crop that doesn't hurt the planet and which doesn't require too much work, and which makes us money. If you let nature work, it will provide for people.