

## **Tools and Techniques for Transitioning from Small to Large Scale Vegetable Production**

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In 2002 we started our farm with a ¼ acre garden plot, a walk-behind rototiller, rakes, hoes, earthway seeder and garden sprinkler. We sold our produce during the summer on a plywood table by the road. Employees: 3 very part time. Sales were about \$7000.

In 2013 we farmed 20 acres of mixed vegetables, selling primarily through our Year-round CSA, farmers market, farmstand and wholesale accounts all within 25 miles of the farm. Along the way we have upgraded our tools and techniques to scale up vegetable production and markets. Today we have 2 heated greenhouses and 7 unheated high tunnels. Employees: 5 full time; 7 seasonal. Current sales (including livestock, poultry and eggs) are around \$700,000.

### **How did we get there from here?**

As we scaled up in production we increased our markets – marketing was and is the key. As we have grown our markets we looked for areas to mechanize and become more efficient and keep crew morale high in the fall after a long season. These factors led us to purchase the tools we use today.

Some of the most profitable crops for us are the ones that are precision seeded, little weeded, and harvested mechanically (salad greens and root crops). As a result we are growing more of these crops.

### **Mechanical Harvesting – what is the payoff?**

#### Greens harvester

Our walk behind greens harvester can cut greens grown on a 44 inch bed top, it is used year round – in hoopouses too. Cutting greens by hand it takes 5 hours to harvest 100 lbs. of greens, with the harvester it takes 20 minutes (including setup of harvest totes) – this is a fifteen-fold reduction in labor. Harvester cost \$7000 used, paid for itself in labor savings after harvesting 14000 lbs. greens – at our level of greens production this means it paid for itself in about 16 months.

## Roots Harvester

Our carrot/beet harvester can mechanically harvest about 1 acre/day. This is expected to increase as we move to harvesting directly into bins. Harvester cost \$8000 used, payback is immediate for crew morale as they enjoy working on it and are not beat from dragging bags of roots through the fields in cold fall weather.

Key lessons learned:

1. ID bottlenecks in systems and problem solve to reduce/remove them
2. Reduce handling/lifting across the board for every task!
3. Its all about materials handling – see no. 2

## **Tools Today at Jericho Settlers Farm**

<p><u>Tractors</u>            Massey 65 2WD – 50 hp            Kubota MX5100 4WD – 50 hp            Kubota 8540 4WD- 85 hp            Kubota L245H – high clearance offset cultivating (three of these)            Allis Chalmers G – (two of these mounted with budding basket weeders)            Farmall Cub – (3 of these for cultivating and side dressing fertilizer)</p>	<p><u>Tillage</u>            3 bottom plow            6 ft disc harrow            6 ft roller harrow            48” Kuhn rototiller            13 foot Perfecta harrow            4 shank chisel plow            3 shank subsoiler</p>
<p><b>Bed shaping</b>            Rainflo plastic layer            Lesche bed shaper            48” Kuhn rototiller            Rainflo tunnel layer</p>	<p><b>Cultivation</b>            Lilliston cultivator            2 Buddingh basket weeders            Cultivating shovels, discs, spider wheels            6f t Lely tine weeder            2, two row potato planter            Homemade flame weeder on 3pt</p>
<p><b>Planting-Seeding</b>            Earthway hand push seeder            Planet jr hand push seeder            Planet jr 3pt seeder            Rainflo water wheel transplanter            Grain drill for cover crops            Cone seeder            Rainflo 3 pt bed marker            Sutton Ag seeder, 3pt</p>	<p><b>Fertilization</b>            EZEE flow bed fertilizer            Cone fertilizer on Kubota L245H and farmall cub</p> <p><b>Mechanized Harvesters</b>            Greens Harvester, 51 inch cut width            Scott – Viner Carrot/Beet Harvester</p> <p><b>Other harvesting tools</b>            3 pt Undercutter bar</p>

<p><b>Greenhouses</b>  1 heated seed starting greenhouse  2 heated winter growing/early tomato houses</p>	<p><b>Hoophouses</b>  6 fixed hoophouses  1 mobile hoophouse</p>
<p><b>Wash/Pack</b>  Grindstone Barrel Washer  Brush washer, conveyor, sorting table  Stainless steel tanks and tables  Rubbermaid tanks  Wash machine for spinning greens  Pallet jack  Field Bins  Walk in freezer</p>	<p><b>Other</b>  Onion topper  Irrigation reels  Overhead hoophouse irrigation  Driplines  Solo backpack sprayer for pest sprays</p>
<p><b>Refrigeration</b>  5 walk-in coolers  walk in freezer</p>	<p><b>Warm storage</b>  For squash, sweet potatoes, etc.</p>