



Weed Management and Machinery for Vegetable Production

Scott Thellman
PFI - 2019

About Me

- Owner of Juniper Hill Farms, LLC
- 2014 graduate of ISU
 - Agricultural Business
 - Agronomy
 - Agricultural Entrepreneurship
- Agricultural Entrepreneur
- Interests in post harvest handling, marketing, storage, and distribution of local and regional foods.



Background

- Raised in Lawrence, Kansas.
- Moved with family to rural Douglas County, Kansas in 1999.
- Became interested in agriculture as a kid.
- Began working at different agricultural operations in my area as a teenager.
 - Sweet corn, vegetables, cattle, row crops



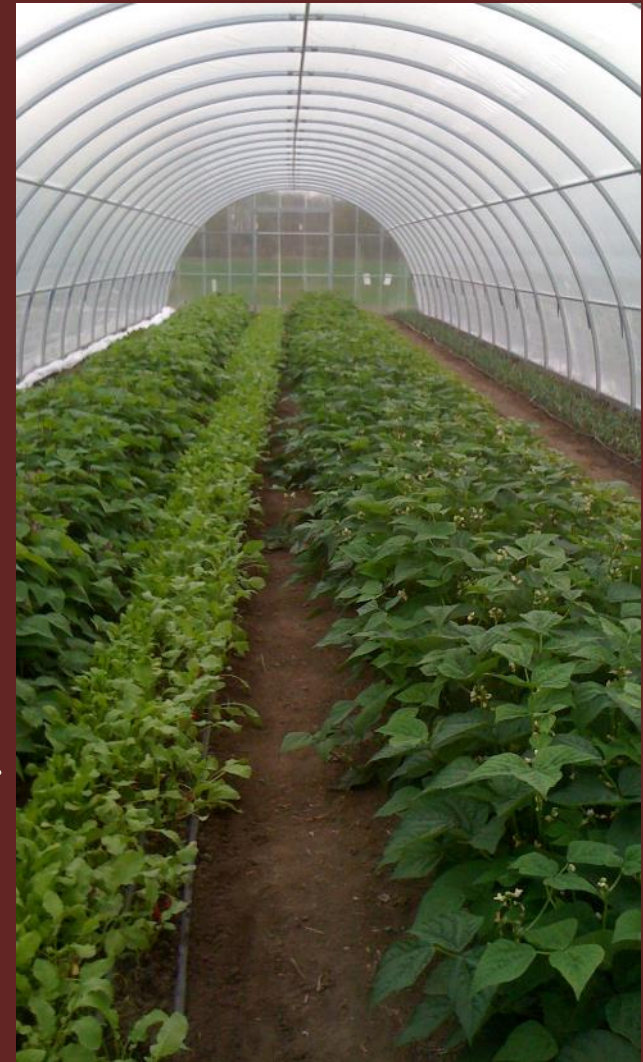
Background

- Became interested in starting my own farm.
- Purchased some old hay equipment with savings from summer jobs.
- Baled 15 acres of hay in 2006, and sold it quickly.
- Saw my opportunity to enter into farming!



Background

- Expanded hay operations throughout high school.
- Graduated high school in 2009, and produced 10,000 small square bales that summer.
- Entered into vegetable operations in 2010 with the construction of our first high tunnel.
- Started schooling at Iowa State in the fall of 2010.



Background

- Constructed second high tunnel in 2011, and grew on one acre.
 - Primarily marketed crops at farmers market's.
- Expanded to two acres of vegetables in 2012, and focused on direct sale to grocers and restaurants.
- Partial USDA Organic Certification of farm in 2012.
- Increased hay production to 500 acres.



Background

- Operation continued to expand slowly throughout college.
- Graduated Iowa State in 2014.
- Expanded to 4 Acres Organic vegetables in 2014.
- Hay acreage grew to 600 acres in 2014.
- After graduation from college, farm started rapid growth period.



Today we...

- Produce over 1,500 acres of hay, alfalfa, small grains, and row crops.
 - 2,750 round bales and 3,000 square bales in 2018.
- Grow 50 acres of vegetables
 - 20 USDA Certified Organic, 30 Conventional in vegetable production.
 - Serving 21 grocery stores, 20 restaurants, 2 school districts, various wholesalers, and other markets.
- Provide agricultural consulting services, hay and vegetable brokering services, and custom hire services to over 75 customers around the region.



2011

**1/4
Acre**

2012

1 Acre

2013

2 Acres

2014

5 Acres

2015

18Acres

2018

50 Acres



Crops We Grow

- Hay and Forage
- Small grains and row crops
- Hops
- 2018 Vegetables
 - Leaf Lettuce, Spinach, Kale, Chard, Beets, Potatoes, Watermelon, Pumpkins, Sweet Corn, Carrots, Cilantro, Basil, Napa Cabbage, Bok Choi, Winter Squash, Head Lettuce, Turnips, Radishes, and more!



How have we grown our farm
while dealing with weeds and
equipment needs?



Slowly and with a lot of mistakes!



Our System

- Low labor, high efficiency.
- More machinery, cultivators running vs hand labor and hand tools.
- 2 full days per week dedicated to crop care and weeding.



Crop Successes

- Certified Organic
 - 20 Acres
 - Leaf lettuce, greens, arugula, baby kale
 - Transplanted crops
 - Winter Squash
 - Tomatoes
 - Potatoes

The farm always looks great until about May 15th, then it's all downhill!



Crop Struggles

- Certified Organic
 - Beets
 - Swiss Chard
 - Spinach
 - Head lettuce
 - Spinach
 - Summer squash
 - Sweet Corn

All of these are crops we have had successes and failures with.



Crop Failures

- Certified Organic
 - Sweet potatoes
 - Carrots
 - Parsley
 - Direst seeded herbs
 - Heirloom Watermelon



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ORGANIC IS NOT EASY!

- We have struggled on most of our large scale organic plantings to keep up with weed control.
- Most of this has come down to lack of labor for detailed weeding.
- Mechanical cultivating is essential in our operation to keep up with it all.



Conventional is much easier
in our system!



Crop Successes

- Conventionally
 - 30 Acres
 - Pumpkins
 - Winter Squash
 - Watermelon
 - Sweet Corn
 - Peppers



The farm always looks great
until about July 15th, then
it's all downhill!



Crop Struggles

- Certified Organic
 - Sweet Potatoes



Crop Failures

- Conventional
 - None due to weed control.
 - Every crop we have raised conventionally we have gotten at least a partial crop off of.



Organic vs Conventional

- Organic
 - Requires more boots on the ground.
 - Four times as many boots!
 - Labor is significantly higher per acre.
 - One missed cultivation can severely set back a crop.
 - Requires smart field prep and quick turn around from conditioning to planting to irrigating.



Organic vs Conventional

- Conventional
 - Much fewer labor hours per acre required.
 - Allows one operator to handle more of the day to day operations.
 - Helps increase farm revenue when included with organic, as field crew can focus on organic.



Organic vs Conventional

- Issues with OG vs CV
 - Record keeping on every piece of equipment, and equipment clean downs
 - Sprayer clean downs



Equipment



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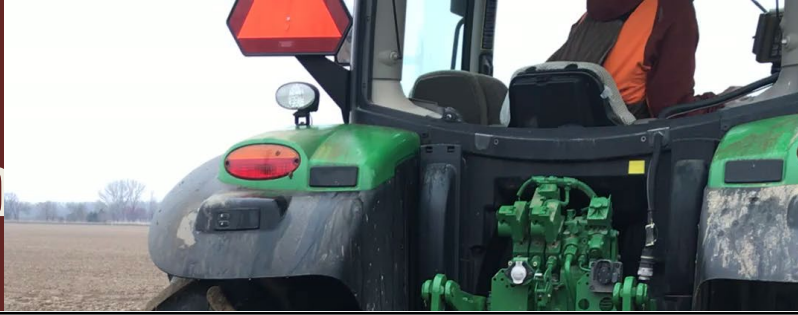
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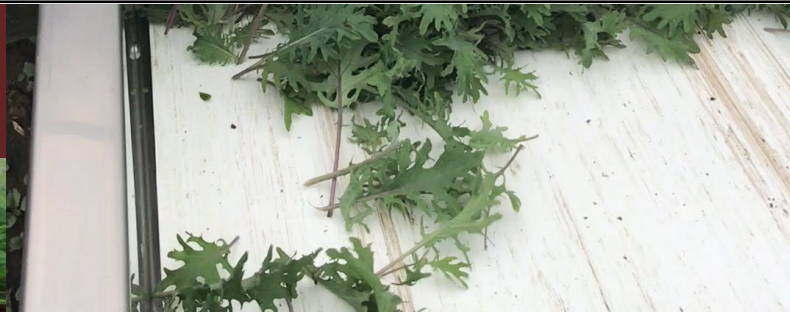
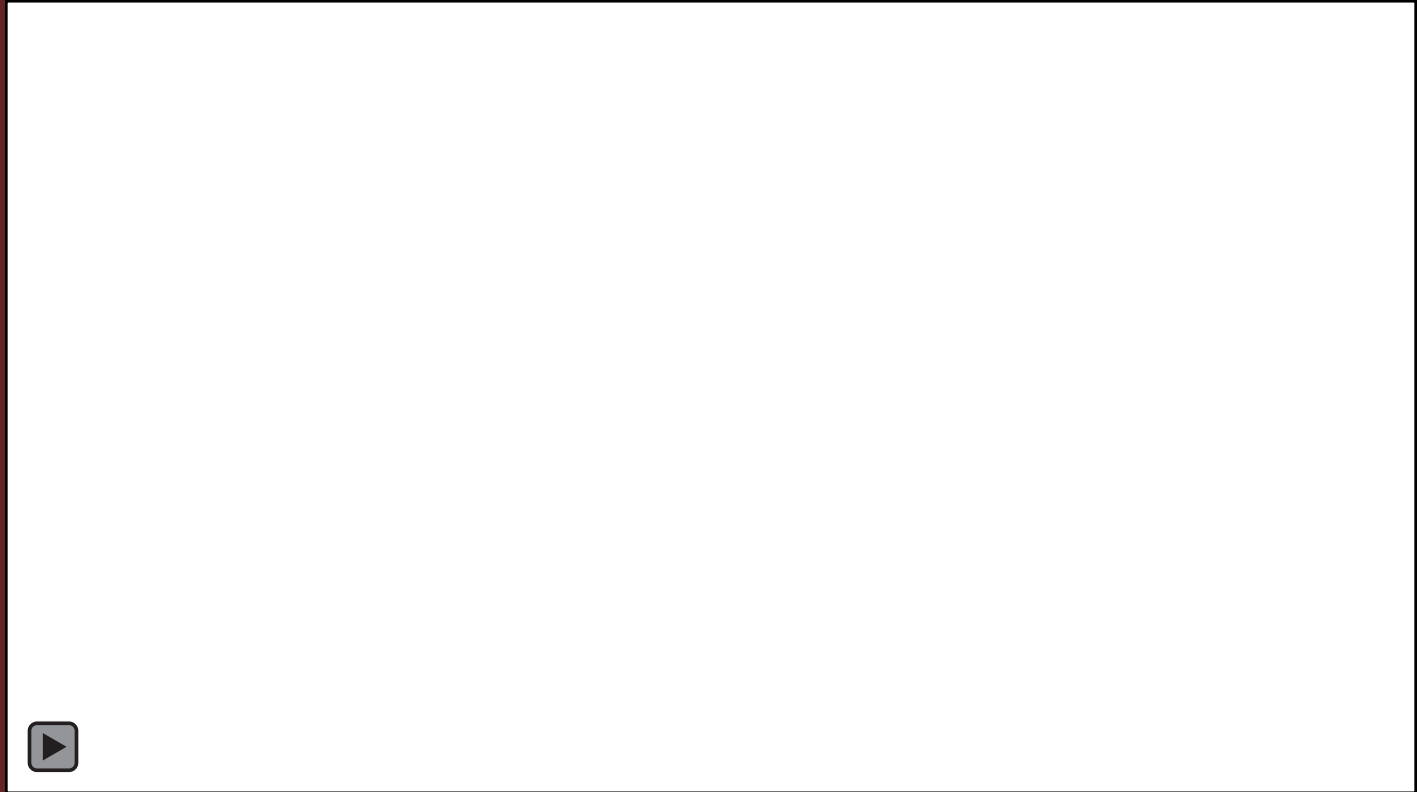
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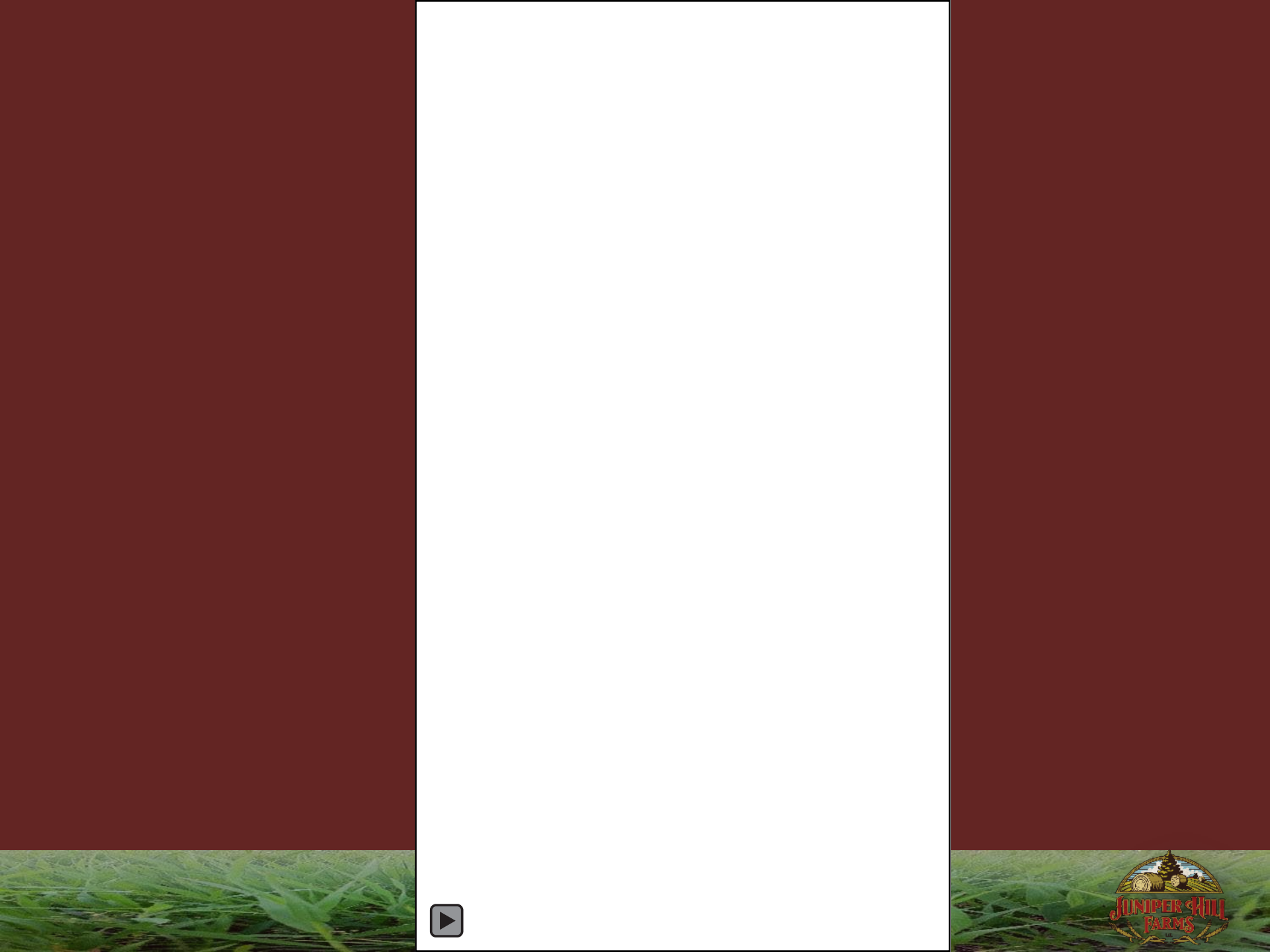


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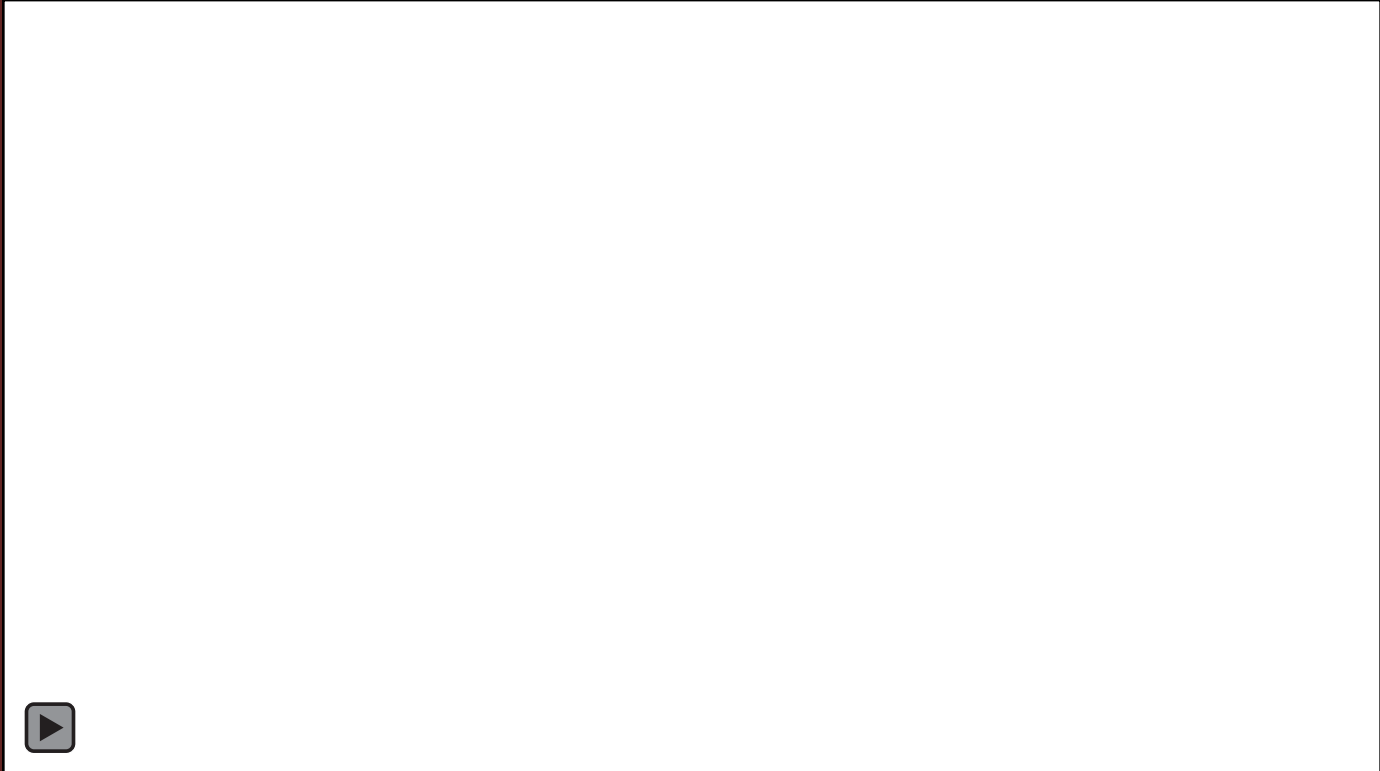


Equipment





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