

**Workshop Title:**

Dry Bean Research

**Speakers:**

Heather Darby, UVM Extension Agronomist; Erica Cummings, UVM Extension Grain Specialist; Jack Lazor, Butterworks Farm

**Executive Summary:**

The session began with a dry bean farmer from Vermont, who explained how he grew his dry beans for 20 years. He explained the challenges as well as his successes while growing. The speaker then took over and explained some of her research on dry beans.

**Main Notes:**

- Increase in interest with heirloom dry beans with the new movement to grow local
  - Speakers (Heather) research in dry beans fuelled by this. Will discuss growing dry beans and management of them

Speaker (Jack) will start

- Grew dry beans for 20 years, learned a lot the hard way
- Very popular until the 1960s. More in Maine than Vermont
- Speaker outlined some of the history of growing beans
- Acreage has declined rapidly since the 60's but local food movement has brought renewed interest and markets
- Heirloom Dry Beans specifically
  - Challenges
    - Seed sources are limited
    - Can be lower yields

- Harvesting whole bean plant is hard
- Can have seed borne diseases
- Agronomics unknown
- Advantages
  - Unique product
  - New markets
  - Premium price
- Fertility
  - Potassium
  - Phosphorous
  - Boron, molybdenum, manganese
- Planting
  - Dry beans, more so than soybeans are sensitive to cold soil and wet conditions
    - Plant in hot week in May, all of a sudden it rains and gets quite cold
      - Want to have ideal conditions to germinate in 3-4 days
      - Always best to wait until climate is somewhat stable, sometimes last week of June and still can get a crop. Speaker thinks the 3<sup>rd</sup>-7<sup>th</sup> of June is normally right, having 60-degree soil
    - Best luck planting with an old-fashioned bean planter

- Several different types, can be plastic
  - Don't hesitate to put down an inch and a half or two inches
  - Speaker likes to plant 5-6 seeds per foot, 2 2.5 inches apart
  - Conclusion over the years is 7-8 seeds per foot as an insurance policy and to give advantages with weed control
  - Beans need to be inoculated, with own specific inoculant. What speaker has done is bought a large bag of it
- Weed control
    - Time sensitive and weather sensitive
      - Dig around and have a look to see what is going on
      - Very sensitive and tender when first sprouting, when leaves form you can go over them with a twine weeder or rotary hoe
    - Speaker recommends a harrow or tine weeder
      - Can adjust aggressiveness, want to be as aggressive as possible without damaging plants
    - Once beans are up, start with row crop cultivation

- Really want to throw dirt up around the base of the plants, which keeps the weeds from growing in the rows
  - Beans require more cultivation than any other crop
    - 4-5 times
    - As soon as they canopy the row, grower stands chance of damaging the plants with the tractor
    - Do not want to be in beans when wet because you can spread disease easily
- Harvesting
  - Standard Practice is pulling
    - Large knives that go under rows, lift the beans right out of the soil
  - Hardest thing to do with large weeds in the field because the growers are undercutting the weeds, which can merge two rows into one
  - A lot of dirt is mixed in, so the next think is to windrow the beans
    - Rows that pick beans up, throw backwards to next set which shakes a lot of dirt off
  - Do all harvesting early in the morning when dew is on crop because a good ripe dry bean can shatter easily, so start at dawn

- Can have the wind rower on the back of the tractor during harvest
  - Bean combine
    - Has a pick up in front, reciprocating arms bring beans into cylinder, where a curtain is (beans use a spike tooth bar rather than brass bar so they do not split) and there is a second cylinder behind the first one
- May get a lot of weed seed
  - Will need to do some cleaning and preliminary cleaning
- Dry crop with an air pump, not an axial fan, that develops static pressure
  - Beans do not spoil quickly, can store at 17-18% moisture for a while
- Starting out, speaker recommends Black Turtle Beans, which are an erect bean that allows grower to harvest with a regular grain combine, might get 1.75, 2.00 per pound as opposed to 3.00 a pound
- Beans need to be picked over by hand
- For small-scale farmer, having 2-3 types of beans can draw people in at farmer's markets.
- In standard varieties, Jacob's Cattle is easy to grow, Light-Red Kidney is very high yield and resistant to staining

- Reason speaker stopped growing was because the time of year for harvest and amount of hand work was a lot in his age, so he moved on

Speaker Heather took over

- From all seed purchased, some had very little seed germination, some with 5%, 25%
  - Poor seed quality over all
  - Not buying certified heirloom seed, does not exist
  - First challenge was germination
- Heirlooms ranged from 100 to over 1000 lbs. per are
  - Pintos had 1500 lbs. per acre
  - Pintos, black beans are the good yielders but not as valuable
    - More reliable, easier to grow
    - Augments with heirlooms getting higher pay
- Trying to find heirlooms with high yield and easier to grow
  - Rattlesnake has been pushed out because it is vining and hard to harvest with standard equipment
- Planting dates
  - In 2015, middle of June was best
  - Overall, with today's climate, speaker found that if ground is warm enough, and if weather is on upward swing of getting warmer, grower should get them in the ground
    - If it's time, just plant them

- Biggest challenge was germination
  - Seeding rates
    - Yellow eye, and most gave 30% yield of what was put in ground
      - Could be due to a wet year, fungi, really do not know
    - Challenging to get 5 seeds per foot, therefore speaker thinks planting around 7 might be safer
  - Water
    - Beans take a lot of water to germinate
- Insect damage was a problem
  - Some seeds are huge, which was good for insects
- Disease
  - On farm scouting done
  - Some diseases more common, such as bacterial bean blight
  - Surprised with anthracnose, on bean seed from Idaho
  - King of the Early
    - Matures earlier than yellow soldier, very good bean to grow
    - Perfect for this region
  - Anthracnose contaminated a lot of what they had on the farm
  - Halo blight was present
- This year, purchased out of Michigan instead of Idaho
  - Ascochyta caused a huge problem
    - Take home message
      - They tested their beans and claimed they were clean

- Does not cause economic losses, but in a dry environment, farmers lost entire crops
- Speaks to the quality of seeds necessary
- Potato leaf hopper
  - Can happen in very dry years
  - Had affinity to certain varieties
    - Hutterite Soup, Spanish Talosna, Tongues of Fire are effected
    - Jacobs Cattle, King of Early, Lowers champion were not effected