

1. Projectname and contact information
Commercial Baby Spring Mix FNE03-487
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2. Goals

Our original objective for this project was to conduct two commercial trial plots comprised of 4 different varieties chosen by the processor. This study was to assess production feasibility and economic feasibility. By the end of the trial we hoped to be able to evaluate the following issues:

- 1) Was the quality of product we produced acceptable to the processor?
- 2) Were we able to produce the product at a cost competitive with western growing regions?
- 3) Would the farmers feel confident they could employ this methodology on a commercial scale necessary to meet the processors needs?

3. Farm profile

Initially, we felt that the methods we would be using would be different from methods for growing mature greens to the extent that greens farmers would not have an advantage over any other non-greens farmer in the valley. As a result, we specifically chose two onion growers so we could gauge the success other onion farmers may have transitioning into this crop. Both farmers' operations were over 100 acres. Due to unforeseen circumstances one onion farmer was unable to participate in the trial. A greens grower volunteered in his place. Unbeknownst to us, this turned out to be extremely beneficial.

4. Participants

Eve Pawelski: maintained records and expenditures.

Chris Pawelski: planted, cared for and harvested the three Goshen plantings.

Tom Zangrillo: planted, cared for and harvested the seven Chester plantings, managed harvest crew, operated vacuum cooler, provided refrigerated trucking, operated vegetable washer.

Maire Ullrich, Orange County Cooperative Extension Vegetable Educator: scouted for pests and recommended solutions.

5. Project activities

Our initial plan was to alternate plantings between Goshen and Chester. As it kept raining and raining, we soon were just trying to get a planting in where ever it was dry enough, balanced by whoever was caught up enough on the rest of their farm work. Even though it was a struggle to get the plantings in and we would have liked to have planted more, we still felt we learned a great deal. If anything, the exceptionally wet weather pointed out problems as well as benefits.

Weed control:

Before we began we knew that weed pressure would be a concern. To give the trial the best chance possible, we planted the trial plots on extremely "clean" ground. Our hope was that the spring mix would jump up ahead of the weeds and that since the plantings would be very close together the spring mix would shade out the weeds thereby controlling them as a problem. When the weather was favorable, this was in fact somewhat successful, though it did not completely control the problem.

The weather during the season never broke enough to let the ground dry out between rain storms. What we saw was that the spring mix stalled out, but the weeds in their natural environment kept right on growing. One planting was lost because there was no way to cut the spring mix from the midst of the weeds. The spring mix needed at least an inch of initial growth to outpace the weeds through the rainy weather.

The lack of an effective herbicide to be used either at or soon after planting was a major problem. Cultivation on the muck soils is a very effective weed control option for many crops. Unfortunately, because of the spring mix high density planting system, where all rows are close together, cultivation was not possible. Many growers take pride in the "cleanliness" or lack of weeds in their onion fields but after planting a crop without herbicides or cultivation, the amount of weed pressure in muck soils is high during certain weather conditions.

Flea beetle damage:

We were warned by our extension agent that flea beetle might be a problem, and indeed it was. Once the small insect began to cause damage, the population seemed to explode. We tried three different labeled materials for flea beetle control. All three were marginal in their ability to control even moderate populations of flea beetles. This meant that extreme vigilance, with early and consistent applications, was required to protect the crop. Missed or delayed applications due to inclement weather quickly resulted in damage to the crop. This was especially true for varieties which had a uniform leaf shape. Varieties which had a more jagged or irregular shape were able to "hide" the damage somewhat. However, it is important to keep in mind that an acceptable level of quality control meant no more than a few holes in an entire acre. As far as a processor is concerned, spring mix is about appearance first.

6. Results

In the western growing regions, weed and insect control is achieved by fumigating with high rates of Vapam. For the rest of the season, western growers are primarily concerned with adequate irrigation. Fumigation is a poor choice for New York muck because it is expensive as well as ineffective if the soil conditions aren't uniform, and muck rarely has uniform soil moisture.

We expected that we would need to be concerned about weed and insect control, and we thought we would only have to worry about irrigation during the hotter periods of the season to ensure germination. Initially, we were pleased with the germination rate of our first few plantings. Then part of a planting was accidentally watered when a neighboring field was irrigated. In the section that was irrigated, we saw a significant improvement in germination and overall increased uniformity in the bed. From that point on irrigation became an important part of our care of the crop.

The quality of our product really benefited from hand harvesting. Hand harvesting allowed us to skip sections of the field that were too badly damaged by flea beetle and also allowed us to adjust the cutting height over the weeds. The company who purchased our product has a near zero tolerance for weed presence in the harvested product. Our selective harvesting allowed us to deliver a product that received an overall rating of a B on an A-F scale from the processor.

However, the speed of harvest using an existing lettuce harvesting crew was slow and inefficient. The crew members were used to handling large size heads of romaine and leaf lettuce and packing twenty-four heads in a box. The spring mix was a much smaller and more delicate product. The harvest crew did a good job in terms of quality, but never seemed comfortable with the miniature size of the spring mix. On average it took 20 workers 8 hours to harvest 1/4 acre.

We also underestimated the delicate nature of the product. Put simply, it wilts very quickly. To maintain the quality of the product, it was immediately placed in a refrigerated truck after harvesting. The product was then transported from the field and placed in a vacuum cooler with a "wet kit", or hydro-vac capabilities. This was crucial to produce the necessary pulp temperatures and humidity levels needed to market on a commercial scale. If we had not had a farmer involved who had this equipment, our trial would have been a failure. We never could have delivered an acceptable product.

7. Conditions

Excessive rainfall:

Excessive rainfall which occurred during the growing season resulted in the complete loss of three plantings. All three were close to harvest with already high levels of moisture present in the soil. The three were planted at very different points in the season and were in fields located a significant distance from each other. After at least two inches of rain, the plantings turned yellow after three to five days and became unmarketable. One favorable aspect of the excess moisture was the opportunity to see if downy mildew developed. Downy mildew has been a persistent problem for spring mix growers in California. We saw absolutely none.

8. Economics

Our cost of production averaged \$.55/lb while California and Arizona average \$.32/lb according to western growers.

9. Assessment

Four areas of concern which stand out as a result of our trial are weeds, flea beetle damage, post harvest care of the product, and cost of production. Foremost of these is that additional methods need to be explored to control weeds. Overall, there was no difference in results between varieties, aside from the ability of the shape of the leaf to slightly obscure flea beetle damage.

Cost of production could potentially be improved by using a mechanical harvester, but under the current situation the quality would be unacceptable. Uniform, consistent quality across the field is essential before a mechanical harvester would be cost effective. The quality of our product was only acceptable because we were able to be very selective in what was harvested by hand. Our assessment at this point is that compared to onions, spring mix has a significantly higher risk factor and a significantly higher initial investment in equipment for a profit margin that is approximately the same or less than onions.

10. Adoption

Reactions to this trial were cautious and mixed. One farmer has decided to discontinue this practice due to the large start-up costs necessary combined with a very high risk factor. The other farmer is considering continuing to explore options for weed and flea beetle control.

11. Outreach

An article is scheduled to be published in the February/March "Muck and Mineral" publication which is received by over 120 growers and industry members.