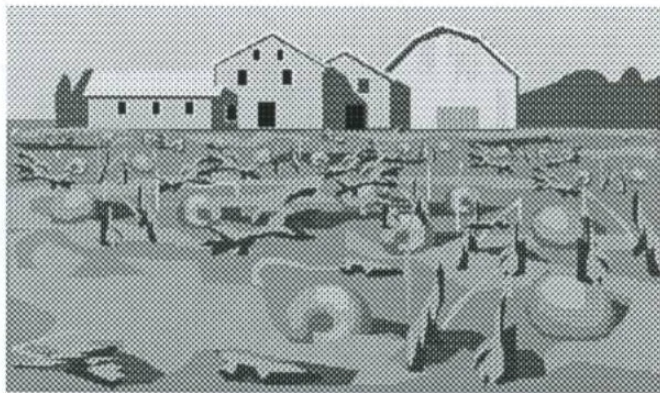


FNE 03-451

COMPOST MOUNDS NO TILL PUMPKINS



Peter J. Andersen
845 Andersen Road
Long Eddy, NY 12760
(845) 887-4817
maple@catskill.net

PROJECT GOALS:

To provide another viable optional production method for both organic and conventional tillage farmers here in the Northeast. We will examine the advantages and disadvantages of direct planting into compost mounds.

FARM BIO:

I am the third generation to operate our 1000+ acre farm. At the present time our major crop is maple syrup where we tap about 9000. Other crops grown include pumpkins, gourds, Indian corn, zucchini, acorn, summer and winter squashes. We also run a herd of 100 head of registered Polled Herefords which we market through our freezer trade and as seed stock. We promote our products as being naturally grown. No hormones or feed additives are used in our cattle. During the fall months we operate a hunting lodge and specialize in white tail deer and wild turkey.

All of our maple products, beef and vegetable crops are direct marketed to the public. This is accomplished through farm markets and sales directly off the farm.

PROJECT COOPERATOR:

Peter Carey was my major cooperater on this project. He is employed by Cornell Cooperative Extension of Sullivan County as an Agricultural Educator. He developed a wonderful manual for the IPM section of this project. Peter was very helpful when it came to scouting for pests and diseases. If we came upon a condition that we could not identify, he sent samples to Tom Zitter, a cucurbit specialist at Cornell University. Peter also organized the public meeting at the farm which was very well attended.

PROJECT DESCRIPTION:

In this trial we looked at two types of tillage methods. The first type we will identify as compost mounds. The mounds were made from composted cow manure and were about one bushel in size. The second type of tillage was conventional where the soil was disced and harrowed prior to planting.

The two trial plots were about 1000 feet apart and contained one acre each. The mounds were placed in rows, 9 feet apart with a mound every 5 feet. This would allow 45 square feet for each hill of pumpkins. The conventional tillage was planted in the same manner. Both plots were managed with identical conditions.

The plot for the compost mounds was created on a piece of land that had been pastured for over 20 years. After the mounds were in place, the plot was

FNE 03-451
COMPOST MOUNDS NO TILL PUMPKINS

sprayed with Roundup[®]. Pumpkins were direct seeded into the mounds. Originally I had planed on planting both plots entirely with seven different pumpkins varieties. With the over abundance of rain, I decided to add nine varieties of gourds and six varieties of squash to each plot. I will discuss the outcome of the gourds and squash after the pumpkin summation.

Germination in the mounds, on the average, was three days faster than conventional tillage. Five of the seven varieties had a high percentage of germination in the mounds. See Table 1.

In July we counted female flowers and recorded the dates when they appeared. See Table 2. Even though there was as much as a two week difference in planting date of some varieties, the median flower date was only a few days.

Table 1

PERCENT GERMINATION		
VARIETY	CONVENTIONAL TILL	MOUNDS
We-Be-Little	49%	22%
New England Pie	59%	85%
Spookie	62%	75%
Orange Smoothies	50%	29%
Mystic Plus	65%	83%
Racer	39%	88.5%
Howdens	48%	92%

Table 2

MEDIAN FLOWER DATE		
VARIETY	CONVENTIONAL TILL	MOUNDS
We-Be-Little	7/30	7/29
New England Pie	7/31	7/27
Spookie	7/30	7/27
Orange Smoothies	7/30	7/24
Mystic Plus	7/31	7/27
Racer	7/30	7/26
Howdens	8/2	7/28

FNE 03-451
COMPOST MOUNDS NO TILL PUMPKINS

On August 15th an evaluation was done to determine how many of the fruits were set. Three random mounds for each variety were checked and an average was calculated. See Table 3. This count included pumpkins of all sizes and levels of maturity. Due to better germination in the compost mounds, in most varieties there was 37% more fruit set by August 15. Please note that some of the conventional till varieties were planted two weeks later and were still flowering at his time.

Table 3

AUGUST 15 th PUMPKIN COUNT			
VARIETY	PLANTED Seeds / Hill	CONVENTIONAL Pumpkins / Hill	MOUNDS Pumpkins / Hill
We-Be-Little	4	8	13
New England Pie	4	3	16
Spookie	4	2	10
Orange Smoothies	4	2	3
Mystic Plus	4	1	5
Racer	3	5	10
Howdens	3	2	4

Harvesting of pumpkins started on September 2nd and continued until October 2nd. On October 3rd we experienced a major killing frost. The reason for the long harvest period is the fact that we only harvest products needed for the weekly farmer's markets. See Table 4.

Table 4

TOTAL SALABLE PUMPKINS ON OCTOBER 1 st				
VARIETY	CONVENTIONAL*	Pumpkins / Plant	MOUNDS*	Pumpkins / Plant
We-Be-Little	163	4.4	63	1.4
New England Pie	33	0.5	160	0.75
Spookie	22	.26	108	0.53
Orange Smoothies	26	.55	20	0.71
Mystic Plus	33	0.4	134	0.63
Racer	53	0.8	245	0.84
Howdens	26	.33	19	0.07

* Total salable pumpkins only. All green, misshapen or diseased pumpkins not counted.

FNE 03-451
COMPOST MOUNDS NO TILL PUMPKINS

♦Calculated with germination count numbers.

If we look at the harvest dates, we can see that the pumpkins planted in the mounds were maturing earlier than the conventional grown pumpkins. See Table 5. The size of the pumpkins in the mounds were smaller than the conventional till. This was probably due to the fact that we had rain fall that was way above normal and the fertilizer that was applied to the mounds drained right through the mounds. In the future if this type of wet weather conditions occur, I would top dress more frequently.

Table 5

MOUND HARVEST DATES

VARIETY	DATES												
	9/2	9/6	9/8	9/11	9/13	9/15	9/16	9/17	9/20	9/22	9/25	10/1	10/3
We-Be-Little	40											23	Killing Frost
New England Pie	2	11	5	10	14	13		10	12		13	70	
Spookie			1			2		9	15		29	55	
Orange Smoothies			3		3					6	3	5	
Mystic Plus						2				1	1	130	
Racer	3	8			3	1	4	13	2	2	9	200	
Howdens							1		2			16	

CONVENTIONAL TILL HARVEST DATES

VARIETY	DATES												
	9/2	9/6	9/11	9/13	9/16	9/18	9/20	9/23	9/25	9/26	10/1	10/3	
We-Be-Little	17	12	34								34	66	Killing Frost
New England Pie	2											24	
Spookie												11	
Orange Smoothies												26	
Mystic Plus								3				30	
Racer				7	2	2	7	2	10			33	
Howdens				1	1							24	

During the growing season we encountered several problems. In June, the cucumber beetles were dusted as they had reached an unacceptable threshold. In July some plants were exhibiting yellowing of the leaves. Tom Zitter from Cornell diagnosed the problem as a lack of potassium. Both patches were then side dressed to treat this deficiency. Dusting commenced in late August when the squash beetle population had reached high levels in both patches. Copper Dragon[®] vegetable dust was the product used.

Weed control was a problem in the mounds because the compost contained high numbers of weed seeds. The Roundup[®] that was applied at the beginning of the growing season controlled the grass on the sod but the weed seeds in the compost mounds had not yet germinated. This led to weed pressure that was difficult to control. In the future I plan to address this problem by either using plastic to cover the mounds or by sterilizing the compost. In contrast, weed control in the conventional till was very effective.

I also planted eight varieties of gourds in the mounds and conventional till. All the small varieties of gourds excelled in both plots. The larger varieties of gourds (goose, big apple, caveman's club, birdhouse, etc.) in the conventional till plot out-performed those in the mounds. The seeds had very poor germination in the mounds. I am unable to explain this.

Three varieties of summer squash and four varieties of winter squash were planted in both plots. The summer squash did better in the conventional till and the winter squash performed equally in both plots. Cucumbers performed better in the mounds than the conventional till.

PUBLIC OUTREACH:

One of the highlights of this grant was a fall twilight meeting on October 9 held at the farm. This free meeting was offered to the general public and supplied valuable information to both the organic and conventional growers. This meeting was well attended by a mixed group of men and women and proved to be quite educational. Most people are not familiar with the word "cucurbit" which comes from the word Cucurbitaceae, a botanical family that includes melons, squash, pumpkins and gourds.

Tom Zitter, Department of Plant Pathology, Cornell University, well known for his work in cucurbit diseases spoke about cucurbit production. A question and answer forum followed his talk.

I offered meeting participants a walking field trip of both plots. A discussion took place regarding many aspects of the cucurbit production. Many were interested in the actual methods I used to make the compost mounds and planting seeds. I discussed the selection of seed varieties based on the current and past years

FNE 03-451
COMPOST MOUNDS NO TILL PUMPKINS

yields. I also discussed marketing of these products through the farmer's markets and direct from the farm sales.

Peter Carey, Cooperative Extension Agricultural Educator, directed the attention of the group to the available pesticide and recertification credits made available through this meeting. He also discussed the grant process.

After the meeting pumpkin pie and pumpkin cake, made from project pumpkins, were served with coffee.

ECONOMIC COMPARISON

	# hours	Mounds	Conventional Till
Place Mounds	24	\$360	—
Plant Seeds	10	\$150	\$150
Disc & Harrowing	3	—	\$150
Seed & Fertilizer	—	\$150	\$150
Spray-Roundup®	—	\$50	\$50
Apply Spray	2	\$20	²⁴ Hours \$240
Scouting Time	16	\$240	\$240
Copper Dust	—	\$24	\$24
Dust Application	5	\$75	\$75
Miscellaneous (fence repair, pick stone, etc)	5	\$75	\$75
Harvest	36	\$540	\$540
Totals		\$1684	\$1694

The above comparison is based on the variable cost. Fixed cost and capital expenditures were not included.

An hourly rate of \$15.00/hour was used for manual labor. A \$50.00/hour rate was used when machinery was involved.

SUMMARY:

After comparing the growth, yields and economics of this project, I find that there is no significant difference between the compost mounds and conventional till. Both plots generated the same gross income. This is in spite of the fact that the mounds produced more pumpkins but their size was much smaller than those pumpkins from the conventional till. Therefore, the total retail value of both plots ended up being the same.

FNE 03-451
COMPOST MOUNDS NO TILL PUMPKINS

I did not address irrigation in my early narrative because it was not a factor this year due to the higher than average rainfall we experienced. The irrigation system for both plots was ready to be put into use if conditions had warranted.

Looking at the big picture, the use of compost mounds provides a producer with an alternate production method. This method is an excellent choice for highly erodible fields because it leaves the sod in place. Leaving the sod in place enables the producer to utilize fields that they would not ordinarily use in their rotations. I plan to continue the use of compost mounds on my farm. It will be interesting to see what happens in the second growing season using the same mounds.

I will be submitting articles to local county extension services for publication in their monthly newsletters.

Peter Andersen
March 28, 2004