

**1. Improving Financial Returns Early in an Orchards  
Life Through Alley Cropping FNE 328**

2. Jack Kertesz  
**Box 204 Clark Road**  
Unity, ME 04988

**3. Project Goals**

Enhance economic returns  
Improve crop quantity and quality  
Improve water use efficiency  
Improve utilization and recycling of nutrients  
Enhance aesthetics of the farming operation  
Expand 'on farm' opportunities to store carbon  
Improve pest control through offering a variety of insect habitat conditions  
Enhance food and habitat conditions for wildlife

**4. Updated Farm information: Note address change above**

**5. Cooperators and their roles:**

John Bunker  
Fedco Trees  
PO Box 520  
Waterville, ME 04903

Russ Libby  
MOFGA Executive Director  
Crosby Brook Road  
Unity, ME 04988

Johnny's Selected Seeds  
Foss Hill Road  
Albion, ME 04910

Rick Kersbergen, Extension Educator  
UM Cooperative Extension  
Waldo Avenue  
Belfast, ME 04915

Ron Desrosiers, District Conservationist  
USDA-NRCS  
9 Green Street  
Augusta, ME 04330

## 6. Tell us what you actually did on your project and what remains to be done:

On May 4th, 2000, 78 fruit trees were planted out at the MOFGA fair site in Unity, ME. Trees were planted out at a 20' X 20 spacing. The planting covered approximately one acre and resulted in seven alleys between rows of the newly planted orchard. The intent of this study was to evaluate the economics of intensively cropping the resulting alleys as a means of offsetting the lack of early financial returns in newly established orchards. Soil amendments were added at the time of planting. All trees were mulched and protected from rodent damage. The alleys were cropped in 2000, 2001 and 2002.

A variety of crops were grown in the alleys between the orchard rows. Primary crops grown include squash, beans, nursery crops, mixed vegetables and crops grown for seed. Annually planted crops were planted in May of each year. A detailed evaluation of crops grown and estimated value was completed in 2001. This analysis evaluated yields and estimated value of each crop grown. Nursery crop value was calculated based on value of growth made on those crops during that particular growing season. Total value of crops grown in the alleys was estimated to be \$7,744 in 2001. Although crops grown in 2000 and 2002 varied somewhat it is assumed that yields, growth and economic returns were similar for all three years. An irrigation system installed in 2000 helped to stabilize crop yields and crop quality.

This analysis showed that the most profitable crops being grown in the alleys on this particular site were melons (both watermelons and cantaloupes). This crop averaged returns of .49 cents per square foot planted. Allium crops (onions, garlic and leeks) were second and averaged returns of .38 cents per square foot planted. Third was medicinal herbs and cut flowers which averaged returns of .36 cents per square foot, followed by nursery crops which demonstrated returns of .34 cents per square foot planted. Seed crops did not prove themselves to be as profitable as other crops being grown.

The attached spreadsheet details in kind match and actual expenses incurred. Total match amounts are primarily donated materials and labor. Over the three-year period these added up to \$8,160. In addition technical assistance was provided by UM Cooperative Extension with an estimated value of \$1,000 and USDA-NRCS also with an estimated value of \$1,000. Total in-kind contributions for the three years total \$10,160.

Labor expenses over the three-year period totaled \$10,894 and purchased materials totaled \$2,894. The spreadsheet captures all costs for donated labor/materials as well as purchased labor/materials. The costs for each year are subtracted from the estimated economic value (\$7,744) of crops grown in the alley. The results show a net gain of \$40 for the establishment year, \$580 for the second year and \$664 for the third year.

These costs may then be compared against an apple budget developed by Penn State. These costs are representative of a typical planted orchard where there are no economic returns in early years of an orchards life while costs are being incurred. The PA apple budget shows a net cost of \$2,749 for the establishment year of an orchard and \$1,160

maintenance costs for both years two and three. Our experience in the MOFGA Alley Cropping Demonstration showed that although labor and input costs were greater at the MOFGA site these higher costs were offset by the economic returns of the cropped alley.

Our largest expense category on this site was labor. Two factors of this location may have contributed to higher than typical labor expenses. First off, due to the high visibility of this site the gardens and orchard have been maintained over the past three years as a 'show garden' of sorts. The extra efforts taken in this garden to maintain a demonstration that would show well inevitably resulted in higher labor costs. In addition the small scale of this operation resulted in more hand labor than may be necessary on a larger scale operation. It may well be possible to further enhance economic returns of an alley cropped orchard planting by producing crops with low labor requirements. Some possibilities may be organic grain or perhaps winter squash grown in plastic covered beds.

Some of the additional economic gains for this project may be more difficult to estimate. For example, each year approximately 25% of the beds had a green manure crop grown in them at some point during the growing season. In 2002 a soil test was taken and compared to an adjacent site, which was not part of the demonstration area. Test results showed a 1% increase in soil organic matter levels on the alley cropping demonstration site. According to USDA data a 1% increase in soil organic matter translates to roughly 10 metric tons of carbon per acre. Current day market prices for carbon are approximately \$10 per metric ton for an added value of about \$100 for below ground stored carbon. It is more difficult to estimate the above ground/below ground carbon stored in the orchard planting. Tree caliper has increased by about 1" during the three-year period. There is an added value here that will continue to grow as the orchard matures and tillage is eventually eliminated as the canopy closes over and the alleys are no longer cropped. Some of the apple trees began to bear fruit in 2003.

Several other benefits are apparent but are more difficult to put a value on. The increase in soil organic matter certainly is beneficial in terms of water use efficiency. Farm aesthetics and the overall appearance of the MOFGA site were enhanced by the alley cropping demo. Throughout the year people gravitated toward this end of the fair ground to view the demonstration site. This may also be evidenced in the popularity of the Alley Cropping tours at the annual fair. The diversity of habitat not only provided aesthetic appeal but also offered a farmscaping opportunity resulting in a diversity of habitat for potential beneficial organisms.

## **7. Outreach**

The site of this Alley Cropping demonstration is the Common Ground Fair site in Unity Maine. The Fair is a three-day event held each year in late September. Approximately 50,000 people visit the site during this three-day period. Tours of the Alley Cropping Demonstration are very popular and a formal tour is held during each day of the fair. A Fair schedule and site map are provided. Many more people take the self-guided tour of the Alley Cropping demonstration not only during the Fair itself but also during the

multitude of other events that take place at the MOFGA Fair site. It is estimated that between 25,000 and 30,000 people tour the alley cropping demonstration annually. Copies of two temporary signs that are posted for self-guided tours are also provided as part of this report. In addition a brochure produced by MOFGA as a fund raising tool highlights the Alley Cropping demo in the photos that are part of this fund raising effort. A copy of this brochure is also provided. A MOFGA newspaper article discussing the Alley Cropping Demonstration has been previously provided as part of an earlier interim report. A permanent sign has been posted at the site of the demonstration which details project objectives and credits SARE. Digital photos suitable for reproduction are also provided as part of this report.



**IMPROVING FINANCIAL RETURNS EARLY IN AN ORCHARDS  
LIFE THROUGH ALLEY CROPPING FNE 328**

						MINUS	
						EST. CASH	
YEAR	DONATIONS					VALUE OF	NET
	GOODS	LABOR*	PAID LABOR**	EXPENSES	TOTAL	ALLEY CROPS	GAIN
2000	\$1,318	\$540	\$4,340	\$1,506	<b>\$7,704</b>	\$7,744	\$40
2001	\$113	\$0	\$6,554	\$497	<b>\$7,164</b>	\$7,744	\$580
2002	\$2,469	\$3,720	\$0	\$891	<b>\$7,080</b>	\$7,744	\$664

The above costs and net gains may be then compared to an apple budget developed for Pennsylvania growers. These costs are shown below. This PA apple budget is provided as part of this report. A PA apple budget was used as one does not exist for ME.

Typical PA establishment year costs           \$2,749  
 Typical PA second year maintenance costs   \$1,160  
 Typical PA third year maintenance costs     \$1,160

\* Volunteer labor value was calculated at \$6/ hr

\*\* Paid labor was calculated at \$6/hr for the summer worker and at \$8/hr for the project leader.

# USDA-SARE FUNDED

## ALLEY CROPPING PROJECT

A 2-YEAR STUDY TO DETERMINE  
ECONOMIC RETURNS FROM DIVERSE  
CROPS INTERPLANTED IN AN ORCHARD.

AUG 12  
SEPT  
21, 22, 23

CONTACT: JACK KERTESZ 568-3444  
(PROJECT LEADER)

**IMPROVING FINANCIAL RETURNS EARLY  
IN AN ORCHARD LIFE THROUGH ALLEY  
CROPPING**

**THIS PROJECT WAS SPONSORED BY S.A.R.E.  
SUSTAINABLE AGRICULTURE RESEARCH AND  
EDUCATION. A TWO YEAR, \$11,000 FARMER  
GRANT WAS AWARDED TO JACK KERTESZ,  
A MEMBER OF MOFGA'S LANDSCAPE COMMIT-  
TEE, TO STUDY THE VALUE OF ORCHARD INTER-  
CROPPING. PLANTING OF THE ORCHARD  
BEGAN IN THE SPRING OF 2000 AND WILL  
CONTINUE NEXT YEAR. THIS ACRE AND A  
1/2 SITE WILL INCLUDE MIXED FRUIT TREES  
(APPLES, PEARS, PLUMS, PEACHES AND  
SOUR CHERRIES), NITROGEN FIXING SHRUBS  
AND FILBERTS. VARIOUS ROW CROPS WILL  
BE TRIALED IN THE ALLEYS WHILE SPACE  
IS AVAILABLE. SHADE TOLERANT SPECIES  
WILL BE UTILIZED AS THE TREES GROW  
LARGER. THIS YEARS FOCUS HAS BEEN ON  
RAISING NURSERY STOCK, VEGETABLE SEED  
CROPS, ORNAMENTAL GRAINS AND GRASSES,  
AS WELL AS SOME HEIRLOOM VEGETABLE AND  
DRY BEAN VARIETIES. SOIL IMPROVEMENT  
BEGAN 2 YEARS AGO WITH THE ADDITION  
OF VARIOUS ROCK POWDERS. 'HERB COMP'  
COMPOST WAS USED EXCLUSIVELY ON THE  
BULK OF THIS SITE. A SMALL CROP OF SPRING  
WHEAT WAS FERTILIZED WITH COMPOST FROM  
DDEVITOLIC FATRS**

**THIS ALLEY IS RESERVED FOR VEGETABLE SEED PRODUCTION. SEED CROPS ARE A VIABLE BUT TEDIOUS OPTION FOR SMALL GROWERS. THE USUAL CONSTRAINTS OF PRODUCING VEGETABLES (PESTS, DISEASES AND THE VAGARIES OF THE WEATHER) ARE ENCOUNTERED. SEED COLLECTION CAN BE OVER A LONG INTERVAL (AS IN LETTUCE) OR CONCENTRATED IN THE FALL. VERY FEW LOW TECHNOLOGY DEVICES ARE AVIALABLE TO ASSIST THE SMALL GROWER IN HARVESTING AND CLEANING SEED. MELON SEED PRODUCTION INVOLVES HALVING THE RIPE FRUIT, SCOOPING OUT THE SEEDS SEPERATING THE SEED FROM THE PULP, FLOATING OFF PULP AND HOLLOW SEEDS, THEN RINSING, DRYING AND WINNOWING. THE SEED THEN UNDERGOES GERMINATION TESTS TO DETERMINE ITS VIABILTY. ECONOMIC RETURNS ARE NOT SUBSTANTIAL HERE, BUT SEVERAL CROPS REQUIRE ONLY A SMALL AREA TO FULFILL THE NEEDS OF SOME OF THE REGIONAL SEED COMPANIES. THERE IS A NICHE HERE AS HEIRLOOM AND SPECIALTY CROPS BECOME MORE AVAIL- ABLE IN THE MARKET. SOME GROWERS WILL CONTINUE TO RAISE THEIR OWN SEED CROPS TO HAVE CONTROL OVER QUALITY AND AVAILABILITY.**





Jack Kertesz's demo garden Unity, Maine 7/12/2000





**One 20 x 100' alley maxed out with chicory, carrots/  
parsnips, mixed greens.**





**Jack has planted a demonstration orchard here. Part of the demo involves showing how an orchard can be made while the trees are still young by growing vegetables between the trees.**