



Pleasant Valley Farm
Argyle, New York

February 2019

Paul & Sandy Arnold



PLEASANT VALLEY FARM ARGYLE, NEW YORK





ARGYLE, NY ZONE 4

- ❖ Land purchased in 1988-60 Acres
- ❖ Rent Neighbors 120 Acres



2018 PRODUCTION

- ❖ 4 Acres Mixed Diverse Vegetables
- ❖ ½ Acre Large Fruits
- ❖ ¼ Acre Small Fruits
- ❖ 3-4 Acres Cover Crops
- ❖ Hay fields used by Beefalo farmer
- ❖ CNG certified



2018 MARKETING

- ❖ Sell at 3 local weekly farmers' markets in summer & 2 Saturday winter markets-82%
- ❖ Wholesale: Restaurants 12% Other 6%



OUR MISSION IS TO OPERATE A FARM THAT WILL PROVIDE:

1. A healthy, challenging, financially successful, family centered lifestyle.
2. Consistent, high quality, organic fruits and vegetables that make us proud.
3. A way of life that is an example to those around us.
4. Time to be an educator of environmentally sound agriculture to our employees, customers, and the community.
5. A rural environment that teaches good moral values and work ethics to our children, while providing time for fun and interesting opportunities.

MISSION STATEMENT 12/94



OUR 10 KEY FACTORS TO REACHING OUR GOAL OF PROFITABLE FARMING

- ***INEXPENSIVE START-UP WITH SMART EXPENDITURES***
- **GOOD BUSINESS MANAGEMENT & RECORD KEEPING**
- **LABOR EFFICIENCIES TO MAXIMIZE PROFITS**
- **EFFICIENT PRODUCTION SYSTEMS & SOIL MANAGEMENT**
- **MULCHING AND WEED CONTROL**
- **PEST AND DISEASE MANAGEMENT**
- **SEASON EXTENSION-ROWCOVERS & FIELDHOUSES**
- **YEAR-ROUND HIGH TUNNEL PRODUCTION**
- **POST-HARVEST HANDLING AND CROP STORAGE**
- **CREATIVE MARKETING**



**Crop Production for Winter
Storage for Added Sales
Filling Out Our Table—
at Pleasant Valley Farm**

February 2019

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- ❖ FRESH SPROUTS FROM GH
- ❖ FRESH GREENS FROM TUNNELS
- ❖ STORED GREENS FROM ROOT CELLAR
- ❖ STORAGE GARLIC & ONIONS
- ❖ STORAGE ROOT CROPS FROM ROOT CELLAR
- ❖ STORAGE WINTER SQUASH & SWEET POTATOES



What we sell in the Winter

GROW QUALITY CROPS TO HAVE QUALITY PRODUCTS IN STORAGE



....AND QUALITY COMING OUT OF STORAGE



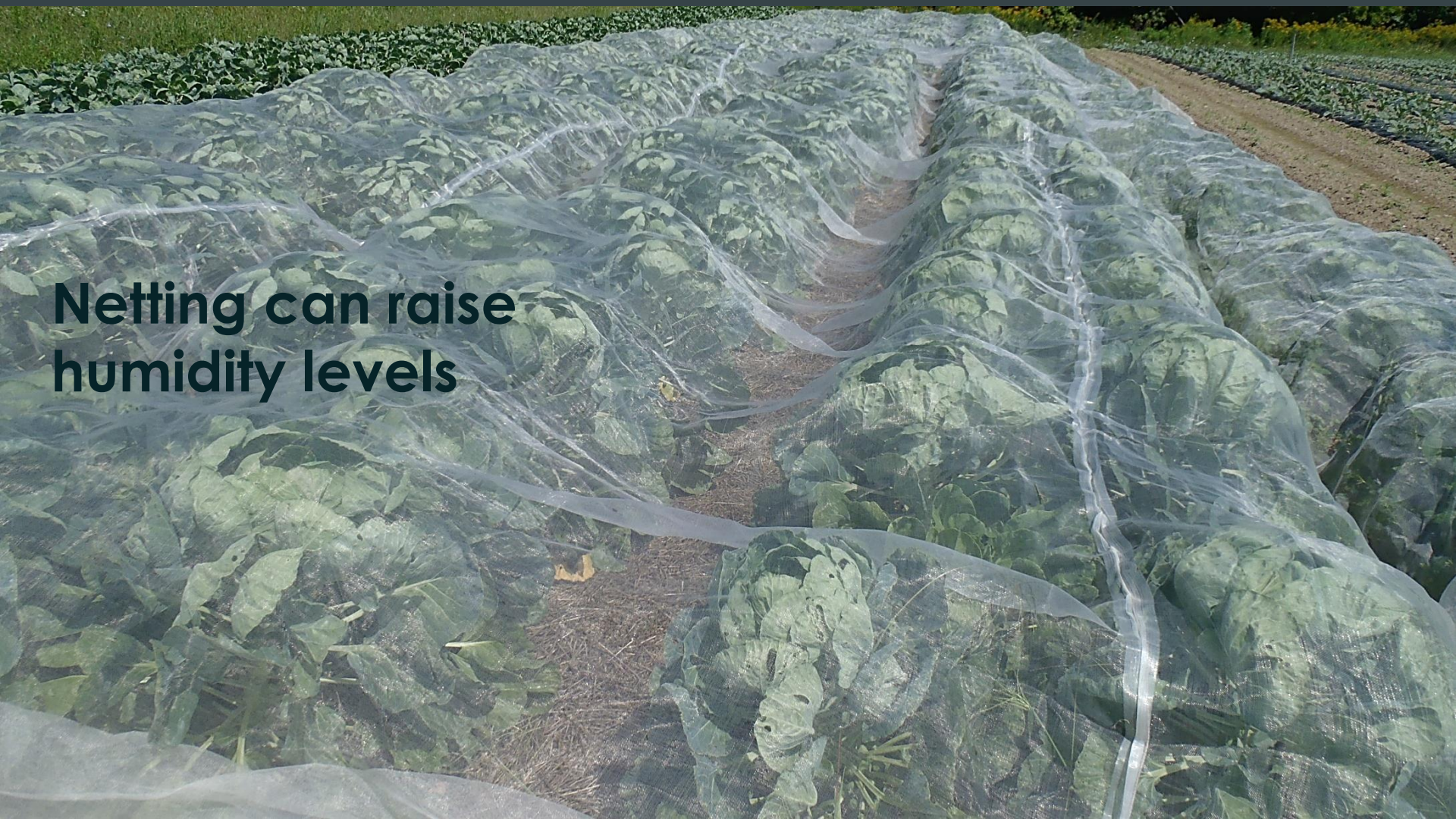
HARVEST AT PROPER TIME



- Netting for Insects
- 3 types
- Great investment
- Biothrips netting for thrips, flea beetle

**HIGH QUALITY AT
HARVEST MEANS
FASTER PROCESSING
AND HIGHER POST-
HARVEST QUALITY**





**Netting can raise
humidity levels**

**Protek Netting 65 gram for Cabbage Moth
Brussels Sprouts—no spraying & High
Storage Quality**

KEEP WEEDS OUT!



CLEAN CROPS MEAN
FASTER HARVEST
AND HIGHER QUALITY
OF PRODUCE...



LELY TINE-WEEDER-CONVERSION TOOL

- Hinged so can use or not
- Williams Tool type system
- Blind cultivation
- Speed determines how aggressive
- Lettuce, beans, potatoes, carrots
- Great for in-row weeding
- Done weekly if possible







One pass to do all:

- Paths with sweeps
- Basket Weeders
- Lely for in-row weeds
- Best at white thread stage



**MULTI-
PURPOSE FOR
SHORT or
LONG TERM
COOLING &
LOW/MEDIUM
HUMIDITY
STORAGE
MARKETS**



WALK-IN COOLER 12X14



- Onions
- Garlic
- Winter Squash
- Sweet Potatoes
- Root Crops
- Brussels Sprouts
- Leeks
- Brassicas
- Greens

CROPS FOR STORAGE



HARVEST

- FORK OR UNDER CUTTER BAR
- CLIP OFF ROOTS
- STACK GENTLY

GARLIC



RACKING

- BUILD AS
- GARLIC
- COMES IN
- AMPLE
- SPACE
- FAN

GARLIC



RACKING

- Best is in the High Tunnel
- Dries faster
- Shade cloth if needed

GARLIC



DRYING

- EASY ACCESS
- READY FOR SELLING!

GARLIC

GARLIC STORAGE

32 DEGREES
60-70% HUMIDITY

CAN VERNALIZE so
STORE SOME AT 50
degrees

WINTER STORAGE





- GREAT USE OF SECONDS
- PEEL AND PUT THROUGH FOOD PROCESSOR
- DEHYDRATE ABOUT 12 HRS
- GRIND MEDIUM COARSE
- BAG IN MINI-ZIPLOCK
- SELL AT \$1.50 FOR .03#
(Heaping Tablespoon)
- VALUE ABOUT \$30 PER POUND
- STORE IN SEALED GLASS JARS
IN COLD ROOM (35 DEGREES)

GROUND GARLIC



- Winnowed
- Field Cured
- Necks must be dried down well (at least 1 week in sun)-Overlap
- Beware of sun scald
- Sorted as crated

ONIONS & SHALLOTS



ALTERNATIVE CURED IN GREENHOUSE ON RACKS or IN BARN

Onion Varieties:

- Red Wing
- Expression
- Walla Walla
- Pontiac

ONIONS & SHALLOTS

STORAGE

- TEMP 32
- HUMIDITY 60-70%
- Store till late winter

CONSERVOR Variety

ONIONS & SHALLOTS



Harvested,
washed or not
washed...

WINTER SQUASH

Directly to 20 Bushel bins now



WINTER SQUASH

Pay attention to
details for
maximum profits



BETTER
QUALITY
MEANS A
HIGHER PRICE

CURING SITES IMPORTANT



Optimum Curing for Winter Squash:

- **INDOOR: 80-90 degrees for 7 days with ventilation**
- **OUTDOOR: Field cure in sun for 5-7 days-CAUTION**
- **Longer if cooler**
- **Taste better with age**

Varieties vary for curing times

CURING SITE



- SOIL TYPE
- UNDER-CUTTER BAR



Roeters in Michigan

<http://www.roetersfarmequipment.com>

SWEET POTATOES



**BINS
20 BUSHEL**

TYPAR ROWCOVER

- **HEAT**
- **DEER**
- **PLANT SKYDD**



SWEET POTATOES

**COVINGTON
BURGUNDY
MURASKI
ORLEANS
BELLVIEW
BAYOU BELLE
BONITA
AVERRE**



SWEET POTATO VARIETIES-Trials



Optimum Curing for Sweet Potatoes:

- 85-90 degrees for 4-7 days at 80-90% humidity
- Longer if cooler
- Taste better with age

STORAGE AREA #3:
When supply down,
move to heated cooler

CURING SITE



- Vent-less Propane Heater—Or Electric
- Dehumidifier
- Plastic Bins- Decade \$130
- TEW Vegetable Washer



CURING SITE



- TEW
Vegetable
Washer
- Heated
water
- Wash weekly
- \$2.50 pound
at market

CURING/WASHING SITE



Invest in the equipment
that makes harvesting
fast, fun and efficient

CARROT HARVEST





- BREAK OFF TOPS
- SORT INTO GRAIN BAGS
- WINNOW BAGS
- LOAD BY VARIETY
- STORE 32 DEGREES
- 95-100% HUMIDITY

CARROT HARVEST





- 1 ROW
- POTATO
- DIGGER
- CHECCI
- MAGGLI
- 1 BUCKET PER
- GRAIN BAG
- LOAD BY
- VARIETY
- GENTLE!

POTATO HARVEST



- CELERIAC
- KOHLRABI
- RUTABAGA

- TRIM TOPS & ROOTS
- PACK IN GRAIN BAGS

**LONG TERM STORAGE
6-8 MONTHS+**

OTHER ROOT CROPS



**MEDIUM TO LONG
TERM STORAGE**

- **TURNIPS**
- **BEETS**
- **RADISHES—
Regular round,
long &
Watermelon
types**
- **TRIM TOPS**
- **PUT IN 5 GAL
BUCKETS**
- **POUR IN GRAIN
BAGS**

OTHER ROOT CROPS



- STRIP LEAVES
- CUT WITH LOPPERS
- DISEASE FREE?
- Store in open bins

BRUSSELS SPROUTS



- Dig with Fork or Under Cutter Bar
- Sickle or cut off some of roots & very top

LEEKS



- **PACK IN 1 BU BINS**
- **32 DEGREES**
- **95-100% HUMIDITY**
- **WINTER LEEKS SOMETIMES LEFT IN FIELD**
- **TRIAL STORAGE AREAS**

LEEKs



**LONG TERM STORAGE
4-5 MONTHS**

- **CABBAGE—
RED & GREEN**
- **Storage #4**
- **Reaction**
- **Super Red 80**

- **CUT AT BASE**
- **PEEL EXCESS
LEAVES**
- **PUT IN 20 Bu
Bins**

CABBAGE HARVEST



**SHORT TERM STORAGE
6-8 WEEKS**

- **CELERY**
- **SWISS CHARD**
- **ESCAROLE**
- **SPINACH**

- **CUT AT BASE**
- **PEEL EXCESS LEAVES**
- **PUT IN STORAGE BINS**
- **MIST IF NEEDED**

OTHER CROPS



**SHORT TERM STORAGE
6-8 WEEKS**

- **LETTUCE**
- **KALE**
- **CAULIFLOWER**
- **BROCCOLI**

- **CUT**
- **PEEL OFF BAD LEAVES**
- **PUT IN OLDER STORAGE BINS**
- **MIST IF NEEDED**

OTHER CROPS

VEGETABLE	TEMP F.	RELATIVE HUMIDITY	STORAGE LIFE	HIGHEST FREEZING TEMP.
Beet, topped	32	98-100	4-6 mon.	30.3
Brussel sprouts	32	95-100	3-5 weeks	30.5
Cabbage, late	32	98-100	5-6 mon.	30.4
Carrot, mature	32	98-100	7-9 mon.	29.5
Celariac	32	97-99	6-8 mon	30.3
Celery	32	98-100	2-3 mon.	31.1
Garlic	32	65-70	6-7 mon.	30.5
Kale	32	95-100	2-3 weeks	31.1
Kohlrabi	32	98-100	2-3 mon.	30.2
Leek	32	95-100	2-3 mon.	30.7
Lettuce	32	98-100	2-3 weeks	31.7
Onion, dry	32	65-70	1-8 mon.	30.6
Potato, late	38-40*	90-95	5-10 mon.	30.9
Radish, Winter	32	95-100	2-4 mon.	
Rutabaga	32	98-100	4-6 mon.	30.0
Squash, Winter	50*	50-70	Varies	30.5
Sweet Potato	55-60*	85-90	4-7 mon.	29.7
Turnip	32	95	4-5 mon.	30.1

* Require curing <http://www.ba.ars.usda.gov/hb66/contents.html>

Adapted from Knott's Handbook for Vegetable Growers

ROOT CELLAR 20 FEET BY 30 FEET UNDER BARN

- 7 foot Ceilings
- Insulated
- Into bank on 2 ½ sides

ROOT CELLAR





**Energy
Efficient**

**Auto light
on/off**

ROOT CELLAR



Loaded via
assembly
line into the
root cellar

2016-
Revamp
Root Cellar

ROOT CELLAR



Revamped in 2016 Much more Efficient

- Plastic Pallets
- Pallet Jack
- 20 Bushel Bins
- Reinsulate
- Rolling 4' 6" Door
- Cement Floor
- Waterproof Walls

ROOT CELLAR



- Move pallets with pallet jack
- Store unwashed
- Store as individual varieties on a pallet

ROOT CELLAR



Water tank
in corner
from
washing
station Filters
dirt out

- Crates sizes and colors vary for different types of produce, rejects, etc
- Can be labeled with EXPO pen

ROOT CELLAR



- Capacity is about 24 pallets with 18" walkway
- Approximately 1 ton per pallet when stacked to ceiling
- Total = 24 tons
- Value of produce stored: \$85,000++



\$10,000 System: Specialized for high humidity storage

Oversized condensor

Heating cycle to defrost

Adjust through the seasons

Compressor-- 3HP outside

Need to keep
humidity 95%+

Monitoring
temp and
humidity is
critical

Consider
monitoring
systems



ROOT CELLAR HUMIDITY CONTROL



Store fruits in
different facility
Ethylene gas
causes maturity
and bitterness

Keep Root Cellar
Clean and Tidy
Rotting produce
also causes
maturing

KEEPING QUALITY



Carrots

Potatoes

Beets

Kolhrabi

Turnips

Radishes

Rutabagas

Celeriac

ROOT CROPS

WHAT WE STORE



Medium
Storage Crops

CABBAGE

LEEKs

BRUSSELS
SPROUTS

CELERY

CAULIFLOWER

WHAT WE STORE



Short Term Storage Crops

Lettuce

Kale

Swiss Chard

Spinach

Escarole

Broccoli

WHAT WE STORE

SOMETHING NEW

- PEA SPROUTS
- \$20 PER POUND
- \$18 PER TRAY
- RETURN HIGH
- + \$100 PER WEEK
- LEARNING!
- NOW SUNFLOWER & MICROGREENS





Critical to
monitor
temperature &
humidity



- MANY OPTIONS**
- WEATHER STATION
 - MONNIT WITH ALARMS
 - SMART FARM INNOVATIONS LLC



MONITORING

- **ROOT CELLARING & STORAGE OF PRODUCE IS AN INEXPENSIVE WAY TO INCREASE SALES**
- **BENEFITS YEAR-ROUND MARKETING/INCOME**
- **SEPARATE STORAGE FACILITIES IMPORTANT**
- **MONITOR STORING CONDITIONS**
- **CURE PROPERLY FOR QUALITY**
- **KEEP CUSTOMERS HAPPY**
- **NEW THINGS TO TRY EVERY YEAR**

SUMMARY

QUESTIONS/DISCUSSION ON STORAGE+?

