

A photograph of an urban farm demonstration garden. The garden is divided into several raised beds. The left side features large-leafed plants, likely brassicas like broccoli or cauliflower. The right side has smaller, bushier green plants. The beds are mulched with straw or hay. A white horizontal line with a diamond-shaped center is positioned below the main title. The background shows more garden beds and a wooden border.

# URBAN FARM DEMONSTRATION GARDEN

*GROWING MORE IN LESS SPACE*

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# MICROSCALE BECOMING MORE COMMON



Tyler Montague and Holiday Dagleish – Keep It Real Vegetables  
Photo: Jeffery Allred, Deseret News

## 2017 Utah Agriculture Census:

- Large loss in farmland
  - 162,792 acres
- Rapid increase in number of farms and new urban farmers
  - + 382 farms
- Smaller parcels
  - Systems are different from large parcels
  - More done by hand and with small equipment



# URBAN FARM DEMONSTRATION GARDEN



- Garden establishment
- Garden size – 1/8 acre total
- Incorporates:
  - Vegetables (2,000 ft<sup>2</sup>)
    - Annual and perennial
  - Tree fruit (900 ft<sup>2</sup>)
  - Cane fruits & berries (150 ft<sup>2</sup>)
  - Vineyard (240 ft<sup>2</sup>)
  - Cut flowers (720 ft<sup>2</sup>)
  - Grass walkways and teaching areas (1,320 ft<sup>2</sup>)













# IRRIGATION DESIGN

Irrigation for vegetable cropping:

- Drip irrigation for efficiency
  - Raised beds
  - Vegetable planting
  - Cut flower section
- Designed to be adjustable for crop spacing and rotation



# IRRIGATION DESIGN

- Netafim drip (0.9/gph)
  - Attached to ball valves
  - Allows for adjustability
  - Easily movable to allow for cultivation
  - \$120.00 for 500 ft.
- Running for 1 hr, 2-3 times/week
  - Sandy loam soil
- Other options for drip available







# FLEXIBLE PLANTING

- T-shaped PVC sections fitted with drip attachment every foot
  - Ball valves used at attachment
  - Crop rotation
  - Variations in garden design and planting dates
  - Spacing adaptability
  - Allows for wide rows







# WIDE ROW PLANTING

- Coupling crops together
- Removing walk-ways to maximize space
- Rows 3 to 4-feet wide
- Couple with interplanting and succession planting



# INTERPLANTING & SUCCESSION PLANTING



- Interplanting or intercropping
  - Season length of adjacent crops taken into account
  - Shorter season crops coupled with longer season crops
  - Garlic next to beans or tomatoes
  - Opens up space as crops are harvested
- Succession planting
  - Spring crop followed by Summer/Fall crop
  - Multiple sowings of same crop (peas, radish, beet, carrot)
  - Extends cropping, prolongs harvest



# INTENSIVE PLANTING BENEFITS & DRAWBACKS



- Benefits
  - Reduces weeds
  - Higher yield potential
- Drawbacks
  - Increased nutrient demand
  - Plant competition should be considered
- Management
  - Fall Cover Crop
  - Crop rotation
  - Fertility management



# VERTICAL PLANTING

- Space is a premium
- Maximize space and maintain yield
- String trellis systems
  - Tomatoes
  - Peppers
  - Cucurbits
  - Requires shade
- Cattle panel trellis
- Stake trellis
  - Single stake
  - Florida weave







FLORIDA WEAWE



# CATTLE PANEL TRELLIS

- Easy and inexpensive
- Cattle panel 8 ft. length
  - \$17.00 per panel
- 3, 5-foot t-posts
  - \$4.77 each = \$14.31
- String or zip ties to secure
- Reusable







# STRING TRELLIS

## TRELLIS:

- 3, 10-foot pieces of ½-inch conduit
    - \$4.85/each, \$14.55 total
  - 2, 90-degree ¾-inch conduit elbows
    - \$4.32/each, \$8.64 total
  - 2, heavy duty T-posts
    - 5 ft. \$4.77/each, \$9.54 total
  - Heavy nylon string
    - 6,300 feet \$18.50
  - Tomato clips (optional)
    - 150 qty. ~ \$5.00
- TOTAL ~ \$56 for 10' trellis**



# BUILDING A STRING TRELLIS AND TOMATO PRUNING



Step-by-step instructions:

- Garden Guys and Gal YouTube Channel, Instagram, Facebook

STRING TRELLIS:

- [https://www.youtube.com/watch?v=Dw8\\_stt4Xmo](https://www.youtube.com/watch?v=Dw8_stt4Xmo)

TOMATO PRUNING:

- <https://www.youtube.com/watch?v=r2ZJjmaL8Y8>







# SHADING TOMATOES

Shading is required for tomatoes

- Sunburn – significant crop loss
- 30% shade cloth
- Applied to the south side or west side of the row
- Local nursery/online suppliers
  - With rivets for easy installation, \$35 for a 12 x 6-foot piece
  - By the roll \$1.00 to \$1.80/ foot for 6-foot width (lengths vary)





# INCORPORATING SEASON EXTENSION

- Season extension techniques:
  - High tunnel
    - Tomatoes
    - Cut flower production
    - Can also use as a shade structure
  - Low tunnel
    - Cut flower production
  - Cold frame
    - Basil
    - Greens



# INITIAL HARVEST DATA

- Vegetable crops
- Value based on USDA pricing
- Small fruits (2020)
- Tree fruits and grapes not yet in production
- Selected higher value crops and focused on intensive strategies in 2020
  - Vertical trellising systems
  - Succession planting

Crop	2019 Harvest (lbs.)	2019 Value (\$)	2020 Harvest (lbs.)	2020 Value (\$)
Basil	5.786	23.14	2.24	8.96
Bean, Green	28.864	38.97	114.35	153.23
Beets	16.17	8.89	97.75	53.76
Blackberry			1.09	6.17
Broccoli	21.4676	50.66	128.52	303.31
Carrot	54.868	42.25	38.39	49.52
Celery	74.47	110.22		
Cucumber			414.77	825.39
Eggplant	24.42	53.24	245.69	535.60
Garlic			69.50	139.00
Garlic Scapes			0.429	1.72
Onion	16.148	19.54	216.95	366.65
Pepper, Hot	3.916	2.74	26.85	53.43
Pepper, Sweet	27.06	36.26	137.76	184.60
Popcorn	2.09	4.18		
Potato	69.652	66.17	119.02	153.54
Radish	2.618	3.82	15.27	22.29
Raspberry			9.03	62.13
Shallots			47.83	143.01
Strawberry			10.48	39.30
Sweet Potato	35.464	32.98		
Tomato	376.046	1500.42	501.03	1999.11
Watermelon	583.704	268.50		
Winter squash	159.764	138.99		
<b>Total lbs.</b>	<b>1,502.51</b>		<b>2,196.95</b>	
<b>Total value</b>		<b>\$ 2,400.98</b>		<b>\$ 5,100.72</b>



# MAKING AN IMPACT

- Garden produce is donated
  - Bountiful food pantry
  - Insecure populations in Davis County
  - Nearly 4,000 lbs. of food
  - 2,800 flower stems to Brightening Blooms
- Davis County Mini Green Belt Initiative
  - Working to create better ordinances for microscale farmers





# QUESTIONS?

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