Community Gardens Fort Yates, NDSU Extension

Producing specialty crops in North Dakota can be very profitable. Sue Isbell manages a community garden project that is generating a lot of value for the communities of Cannonball and Fort Yates. The value is not financial. For Sue and her collaborators, the value is priceless; it is healing a heart, reviving a spirit, empowering a people, and giving quality of life and health to the poor. Cannonball and Fort Yates are located on the Standing Rock Indian Reservation. Sue lives and works here as an Extension Agent for NDSU, head quartered in Fort Yates. Her area is considered to be part of USDA's Strike Force Zone which indicates that at least 20% of the population are living below the poverty level. Some census numbers in the recent years have suggested that nearly 50% of the local residents may be impoverished. Sue sees this poverty and the struggles of her neighbors every day. She says local residents do not have access to healthy foods and are losing the skills and know-how to produce, store, prepare and utilize fresh fruits and vegetables in their diet. Her community garden project is fighting to combat that trend.

There are multiple garden spots and facets that make up the project as a whole. One portion is the school garden in Cannonball. Here students utilize a hands-on outdoor learning space to connect with their land, history and

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culture, while being taught about modern and historic food production practices and healthy eating. They are invited to work with the garden, and teachers are encouraged to utilize the garden to enhance the students' overall education. On a separate lot a few miles away, several gardens are located in high tunnels in the backyard of the NDSU Extension Office in Fort Yates. Sue and her staff are working here to create higher yields and best management practices, utilizing these tunnels to grow more food earlier and later in the year. This increases the opportunity and outreach of their education and food distribution goals. A block away, a large outdoor production area (about 1/5 acre), was turned over to the project and put into production in 2016.

Jerusalem artichokes

Currently, a large variety of fruit and vegetable crops are grown for this venture, including a small specialty crop bed of Jerusalem artichokes. Harvests are given away weekly at sites in Cannonball, Fort Yates, and McLaughlin. Sue seeks to end hunger and rebuild food sovereignty in her community. She and her staff are always adding educational components to their food distribution, teaching consumers new ways to use fresh food. Recently, they purchased a freeze dryer and are exploring the option of making dry soup mixes to bring healthy veggies into local diets throughout the winter.

Analysis

Sue's project is designed to educate and feed people, so she doesn't have the same financial scenario as a producer growing for profit. However, similar to a for-profit farmer, she does have goals and objectives for her gardens and she must make wise decisions with limited resources to meet those objectives. Further, she shares many of the same operational concerns.

In 2016, the gardens (including high tunnel space) covered about ½ acre altogether. There are 3 (16'X24') high tunnels, 1 (30'X40') high tunnel, and two smaller (10'X12') unheated hoop structures. The larger tunnels all have raised beds for growing in. Sue is seeking solutions for watering them efficiently. Currently, she needs to find labor willing and able to spend the time hand watering them as much as needed. Finding and securing that much labor is very difficult and expensive. Additionally, uneven watering, as is often the case with hand watering, can stress plants, lower yields and contribute to disease and pest problems. Reaping the rewards of

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planting in high tunnels requires intense management and increased labor. Investing early in automated watering systems saves a lot of time and money in the long run.

Advice

This year growing a few crops vertically worked out well. Sue and her team used cables strung across the length of the high tunnel to trellis cucumbers, sweet potatoes and tomatoes. They also practiced vertical growing techniques in the outside gardens at a smaller level. Their trellised plants were healthier and had noticeably less waste products.

Sue's advice: "If you decide to grow vertical, you need to have a very strong trellis or support structure. We had cables strung the length of the tunnel and that didn't work. We need to add posts in-line to make it stronger next year. The grown plants get very heavy."

Having large gardens in multiple locations creates a logistical dilemma. Farmers may find themselves growing various crops in a variety of non-contiguous garden areas. In order to make it more manageable Sue states that they plan to start consolidating crops into specific locations; "This should increase our efficiency. We do not have an easy time getting labor, so we need to make things more manageable with less labor."

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2016 Data

Harvest Yield Data					
Harvest Began	13	July			
Harvest Ended	28	Oct			
Harvest Period Lasted	15	weeks			
Total Pound Harvested	8835	lbs.			

Crops Reported	Total lbs. harvested in 2016				
	Cannonball	*Ft. Yates*	*McLaughlin*	*Other*	*Total*
Cucumber	423	623	447	987	2480
Tomato	257.5	401	179	425	1262.5
Zucchini	251.5	450	137	672	1510.5
Bell Pepper	111	127	69	135	442
Cabbage	19	17	7	0	43
Kale	2	1	2	0	5
Beet	7	13	10	3	33
Radish	7	0	6	0	13
Leek	4	0	1	0	5
Onion	1	7	7	0	15
Chard	1	3	1	0	5
Carrot	5	3	5	0	13
Bean	12	4	5	6	27
Hot Peppers	32	37	13	46	128
Sweet Peppers	35	16	21	59	131
Squash	226	703	183	905	2017
Apples	77	35	55	175	342
Rutabaga	0	0	3	0	3
Melons	0	232	42	86	360
Total	1471	2672	1193	3499	8835

High Tunnel Soil Test	Actual	Recommended	Variance	Hi/Low/Avg
(0-6") depth				
pH	7.0	-	-	
N lbs. per acre	344	60	284	High
P ppm	132	16	116	High
K ppm	1995	160	1835	High
Organic Matter	17.50%	-	-	
Soluble Salts (mmhos/cm)	1.70	< 1	0.7	High

Notes:

Raised beds were constructed in the high tunnels in the fall of 2015 and farm fresh, compost rich soil was brought in to fill them.

Soil is Neutral pH; some crops grow fine in this, others prefer slightly more acidic

Soluble Salts are slightly elevated, which may affect salt sensitive plants

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