

## **Tomato Variety/Mulch Evaluation Study**

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### **Introduction**

An evaluation of several tomato varieties along with a comparison of mulches was conducted at the Dickinson Research Extension Center (DREC) during the summer of 1997. This was a suggestion from our DREC Horticulture Advisory Committee. The reason for the study was because tomatoes are such a popular vegetable and local gardeners are becoming more concerned about the efficient use of moisture in home gardens.

### **Materials & Methods**

A total of 20 (8'x8') plots were developed using landscape timbers. Each plot contained four tomato varieties. Tomato varieties planted included:

- Way Ahead Siberia
- Celebrity Super Fantastic
- Big Beef Brandywine
- Champion

Tomatoes were transplanted on June 10 and were provided by Richard Selinger, New England; and the NDSU Horticulture Department.

Mulches were applied immediately after transplanting. Mulches were replicated twice in this study. Mulches used were:

- Grass clippings Wood chips
- Black plastic Buckwheat hulls
- Check (no mulch)

No fertilizer or herbicides; however, residual control was received from Prowl that was applied in 1996 resulting in no significant weed problems.

First harvest occurred on September 3, and the last harvest was September 19 following a hard frost.

Tomatoes were hand-watered on a regular basis.

## Results & Discussion

A total of 4,801 tomatoes and a total of 1,466.4 pounds were produced. However, results of this evaluation were affected by vandalism experienced at the DREC. Plants that were lost about mid-summer were not replanted. Therefore, not all plots had the same number of producing tomatoes. Vandalism occurred in the form of harvesting of ripe fruits by visitors and a big, BIG black lab.

### Evaluation of tomato varieties:

**Celebrity** performed very well in our evaluation study this year. Celebrity has a very upright growth, and the tomatoes were good sized and high-quality flavor. The Celebrity variety appeared to mature slower than other varieties. Rated as the Number 1 tomato variety in our plot this year.

**Siberia** is an early-maturing, high-producing variety. The fruit are quite small, which is typical of early-maturing varieties, and the flavor is good. Some sunscald was experienced late in the season, and this was the only variety not eaten by grasshoppers. This would be highly recommended as an early-maturing variety for homeowner use.

Rated as the second-best variety.

**Champion** is another later-maturing variety that appeared to ripen quickly once the fruit was set. This variety yielded well, in fact, one plant in our plots produced 57 pounds. It has a large fruit size with very good flavor. This was also a very upright growing plant which made harvest easy. Ranked third in this study.

**Big Beef** has a large fruit size, but this year the yield was considered only fair. Some incidence of late blight occurred in mid-summer on this variety. Selected as fourth ranked variety.

**Super Fantastic** plants tended to break down and sprawl across the ground which made harvesting difficult. Production was less than other varieties with only fair production. Fruit size was good along with good flavor. A ranking of five.

**Way Ahead** is another very early-maturing variety with small fruit and medium production. Flavor is rated as fair, and this variety had the most variation in plant and tomato size. For this growing season, Siberia outperformed the Way Ahead variety. Sixth-ranked variety.

**Brandywine** had enormous spreading plants with gigantic fruit and low production. It appears to be a very late-maturing variety and very little fruit reached maturity. Brandywine has a mealy pulp but has a fantastic and rich flavor. Early and late blight diseases also attacked this variety. Seventh ranked.

### Other Varieties:

Other tomato varieties were evaluated at the DREC this year. These varieties were obtained from Ron Smith and included:

- Super Bush
- Viva Italia
- St. Pierre
- Sausalito
- Mont Favet

- Sweet Million (cherry tomato)
- Sungold (cherry tomato)

Viva Italia would be a good tomato paste variety. It yielded well but was quick to wilt during the hot summer months. Super Bush was an excellent upright tomato for a small garden. It had low production and medium-sized tomatoes with average flavor and tough skins. St. Pierre had average production, size and flavor with severe blossom end rot. Sausalito had small fruit, good flavor and few seeds. Mont Favet had small tomatoes with fair production and very poor flavor with tough skins.

Sungold had excellent production, superb flavor and could be picked from the yellow through dark orange color stages. Flavor was excellent at all stages. Sweet Million was also very excellent in production with good flavor and was earlier maturing than Sungold.

### **Evaluation of mulches:**

Mulches are used to reduce soil temperature, build the soil, prevent weeds, keep water in the root zone, control erosion and reduce maintenance resulting in more efficient water use. About three to four inches of mulch was applied in the plots.

**Grass clippings** performed very well. In addition to the production advantage, grass clippings are easy to work with and had a visual advantage during the growing season. Grass clippings held moisture effectively with no weed problems. Grass clippings were the top rated mulch in this evaluation.

**Wood chips** performed well by holding moisture, controlling weeds and providing added organic material to the soil. Availability may be limited, and packaged wood chips are quite expensive. Wood chips rated as the second best mulch.

**Black plastic** was very effective in maintaining a more even soil temperature level and controlling weeds. Plastic was more difficult to water and tended to form puddles on the plastic. Plants grew like rockets although production wasn't as noteworthy as grass clippings or wood chips. Based on production, black plastic would be the third rated

mulch.

**Buckwheat hulls** are a very attractive mulch, however production was low and can be explained by the high absorption of water by the hulls, mounding of hulls around the plants made it difficult to water and we experienced a season-long problem with buckwheat seedlings. Buckwheat hulls rating would be fourth in this study.

**Check (no mulch)** plots produced very well, and this can be explained by the residual that was obtained from the Prowl herbicide application in 1996. Check plots had very few weeds, and since our watering schedule was on a regular basis, plots did not dry out.

### **Mulches used Production:**

- grass clippings 376.8 pounds
- wood chips 339.6 pounds
- black plastic 270.5 pounds
- buckwheat hulls 268.5 pounds
- check (no mulch) 211 pounds

## **Conclusion/Implications of Research**

The use of mulches is becoming an increasingly accepted practice by area gardeners. Experiences with this study will be made available to our Extension clients. Based on mulch performance and plant performance, there appears to be a definite advantage to the use of organic mulches.

Tomato variety information will also be helpful to area gardeners, because it compares varieties that are grown under southwest North Dakota growing conditions. With the large selection of tomato varieties, local data will help in making wise variety selections for our area.

Our transplant date of June 10 proved to be on the late side. Our first killing frost occurred on September 19, and lots of tomatoes were still developing on the tomato vines that were lost to the frost.

<b>Plot# 1</b>	<b>Variety</b>	<b>Number</b>	<b>Pounds</b>
<b>Mulch:</b> Buckwheat Hulls	Way Ahead	75	23.3
	Siberia	118	20.6
	Celebrity	52	20.3
	Super Fantastic	28	17.7
<b>Total number</b>		273	-
<b>Total pounds</b>		-	81.9

<b>Plot# 2</b>	<b>Variety</b>	<b>Number</b>	<b>Pounds</b>
<b>Mulch:</b> Buckwheat Hulls	Way Ahead	42	11.1
	Way Ahead	56	14.7
	Celebrity	56	25.2
	Super Fantastic	38	35
<b>Total number</b>		192	-
<b>Total pounds</b>		-	85.9

<b>Plot# 3</b>	<b>Variety</b>	<b>Number</b>	<b>Pounds</b>
	Way Ahead	82	27.3

<b>Mulch:</b> Grass Clippings	Way Ahead	97	23.8
	Celebrity	85	29.8
	Super Fantastic	34	21.5
<b>Total number</b>		298	-
<b>Total pounds</b>		-	102.4

	Variety	Number	Pounds
<b>Plot# 4</b>	Way Ahead	74	22.2
	<b>Mulch:</b> Siberia	81	21.5
Grass Clippings	Celebrity	62	20.8
	Super Fantastic	29	18.1
<b>Total number</b>		246	-
<b>Total pounds</b>		-	82.5

	Variety	Number	Pounds
<b>Plot# 5</b>	Way Ahead	65	19.1
	<b>Mulch:</b> Siberia	86	25.4
Wood Chips	Celebrity	96	21.8

	Super Fantastic	22	13.3
<b>Total number</b>		269	-
<b>Total pounds</b>		-	79.5

	Variety	Number	Pounds
<b>Plot# 6</b>	Way Ahead	74	17.2
	<b>Mulch:</b>	Siberia	85
Wood Chips	Celebrity	97	24.9
	Big Beef	76	37.1
<b>Total number</b>		332	-
<b>Total pounds</b>		-	104.6

	Variety	Number	Pounds
<b>Plot# 7</b>	Way Ahead	35	8.7
	<b>Mulch:</b>	Siberia	47
Plastic	Celebrity	44	17.1
	Big Beef	29	22.3
<b>Total number</b>		155	-



<b>Total pounds</b>	-	64.4
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	<b>Variety</b>	<b>Number</b>	<b>Pounds</b>
<b>Plot# 8</b>  <b>Mulch:</b>  Plastic	Way Ahead	43	14.3
	Siberia	71	23
	Celebrity	67	20.6
	Big Beef	28	16.5
<b>Total number</b>		209	-
<b>Total pounds</b>		-	74.4

	<b>Variety</b>	<b>Number</b>	<b>Pounds</b>
<b>Plot# 9</b>  <b>Mulch:</b>  Wood Chips	Way Ahead	51	15.1
	Siberia	89	35
	Celebrity	70	33
	Champion	43	37
<b>Total number</b>		253	-
<b>Total pounds</b>		-	120.1

	Variety	Number	Pounds
<b>Plot# 10</b>	Way Ahead	0	0
	<b>Mulch:</b>	Siberia	65
Check	Celebrity	67	25.8
	Champion	41	28.1
<b>Total number</b>		173	-
<b>Total pounds</b>		-	76.1

	Variety	Number	Pounds
<b>Plot# 11</b>	Way Ahead	112	31
	<b>Mulch:</b>	Siberia	121
Wood Chips	Celebrity	84	34
	Champion	62	57
<b>Total number</b>		379	-
<b>Total pounds</b>		-	172

	Variety	Number	Pounds
<b>Plot# 12</b>	Way Ahead	67	22.5
	<b>Mulch:</b> Siberia	53	29.5
Check	Celebrity	71	40
	Brandy Wine	52	43
<b>Total number</b>		243	-
<b>Total pounds</b>		-	135

	Variety	Number	Pounds
<b>Plot# 13</b>	Way Ahead	82	19.3
	<b>Mulch:</b> Siberia	70	22.9
Wood Chips	Celebrity	63	20.9
	Brandy Wine	24	12
<b>Total number</b>		239	-
<b>Total pounds</b>		-	75.1

	Variety	Number	Pounds
<b>Plot# 14</b>	Way Ahead	75	11

<b>Mulch:</b> Plastic	Siberia	59	12
	Celebrity	37	16.5
	Champion	32	25
<b>Total number</b>		203	-
<b>Total pounds</b>		-	64.5

	<b>Variety</b>	<b>Number</b>	<b>Pounds</b>
<b>Plot# 15</b>	Way Ahead	55	17.5
	<b>Mulch:</b> Plastic	Siberia	53
	Celebrity	61	17
	Champion	33	21
<b>Total number</b>		202	-
<b>Total pounds</b>		-	67

	<b>Variety</b>	<b>Number</b>	<b>Pounds</b>
<b>Plot# 16</b>	Way Ahead	63	18.8
	<b>Mulch:</b> Buckwheat	Siberia	85
	Celebrity	48	17.8

Hulls	Super Fantastic	28	17.5
<b>Total number</b>		224	-
<b>Total pounds</b>		-	70.9

<b>Plot# 17*</b>	<b>Variety</b>	<b>Number</b>	<b>Pounds</b>
<b>Mulch:</b> Buckwheat	Way Ahead	30	8.3
	Siberia	21	5
	Celebrity	33	9.1
	Hulls		
*Plants damaged by vandalism	Super Fantastic	11	7
<b>Total number</b>		95	-
<b>Total pounds</b>		-	29.3

	<b>Variety</b>	<b>Number</b>	<b>Pounds</b>
<b>Plot# 18</b>  <b>Mulch:</b> Grass Clippings	Way Ahead	85	25
	Siberia	102	24.5
	Celebrity	95	26

	Super Fantastic	59	20.5
<b>Total number</b>		341	-
<b>Total pounds</b>		-	104

	Variety	Number	Pounds
<b>Plot# 19</b>  Mulch:  Wood Chips	Way Ahead	52	15.8
	Siberia	69	20.9
	Celebrity	79	22
	Big Beef	33	21.8
<b>Total number</b>		233	-
<b>Total pounds</b>		-	80.4

	Variety	Number	Pounds
<b>Plot# 20</b>  Mulch:  Grass Clippings	Way Ahead	78	25.8
	Siberia	77	20.6
	Celebrity	60	21
	Super Fantastic	29	20.5
<b>Total number</b>		244	-

<b>Total pounds</b>	-	87.9
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