

Division of Marketing  
Agricultural Development and Diversification (ADD) Program  
1997 Grant Final Report

Grant Number 12048

**Grant Title**     Optimizing Seeding Patterns and Rates for Red Table Beets Grown in  
                         Beds

**Amount Awarded**     \$8,010.00

**Name**                 Steve Krentz

**Organization**     Krentz Farms  
                         Berlin

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Project No. 12048

Project Title:

Optimizing seeding patterns and rates for red table beets grown in beds. Monitoring the growth rates and size of red table beets planted in various seeding pattern's to determine optimin spacing and the economic viability of planting red table beets in beds.

The orignal intent of this project is to determine the correct spacing of red table beets and the potencial to provide a higher yield per acre, with the reduction of cost for planting, fertilizing, weed control, and harvesting.

The benefits to Wisconsin agriculture would be higher yields per acre of land, which would allow better land use, due to having to rotate the land every four to five years to avoid problems with fungus and disease.

The creation of new jobs in the agricultural industry will be to fresh market the red table beets and their top's directly to the customer. This will involve the handweeding, cutting of the top's and digging the red table beets. We have found that fresh top's from the red table beets are much like spinach and their is an expansion for them in the market. Also with topping of the red table beets the producer can control, to some degree the size of the red table beets. This to will benefit the Wisconsin farm family by being diversified, with more income from seälling the top's and higher yields with the correct size.

The efffficient use of farm land as mentioned before is higher yield of red table beets per acre and more efficient rotation of land.

On July 7, 1997 the test plot for the red table beets was started on a five acre plot. This involved getting the land ready for planting. We had to plow, disk and do finish work. This made the land ready to plant the red table beets in beds. This also took more time due to the

wet weather conditions and the fact that we were working with red clay ground which the beets seem to like best.

The red table beets were planted on July 12, 1997 on the five acres of land, using a grain drill, which we had to adapt for the correct seed size and amount planted, which resulted in eight test beds per test plot. The reason behind planting so late in the growing season was we were unaware if we had the proper funding to proceed with this test project. The different rates for the test beds are as follows:

1. 30 lbs. seed per acre.
2. 42 lbs. seed per acre.
3. 50 lbs. seed per acre.
4. 67 lbs. seed per acre.
5. 100 lbs. seed per acre.

The seed size was No. 10 Ruby Queen Beet Seed.

On July 12, 1997 we also fertilized the red table beets with (9-23-30), 600 lbs. per acre of boron,  $\frac{1}{2}$  gallon of ronnet per acre, and 5 lbs. of pyramid was sprayed.

On August 6, 1997 the red table beets were fertilized again. We also applied an application of 28% foiley feed. This was done because of the wet weather conditions, which created a loss of nitrogen.

On August 18, 1997 the results of the five acres of one acre red table beets per square foot were as follows:

1. 30 lbs. per acre produced 22 plants per sq. ft.
2. 42 lbs. per acre produced 37 plants per sq. ft.
3. 50 lbs. per acre produced 49 plants per sq. ft.
4. 67 lbs. per acre produced 53 plants per sq. ft.
5. 100 lbs. per acre produced 83 plants per sq. ft.

During the growing season we submitted photo's to you of the five acres, showing the growth of the red table beets.

The comparison to the conventional way of planting red table beets in 20 inch rows at 20 lbs. per acre, which produced 27 plants per square foot, all in a straight row.

There was no handweeding due to the wet weather conditions, and short growing season, instead two passes were made with a wick applicator using two gallons of roundup. Due to the short period of growing time and weather conditions we did not purchase the extra parts for the defoliator or detopper resulting in having to make two passes (double cut) on each bed.

On October 23, 1997 we tried to use the onion harvester, to harvest the red table beets and the conditions were too wet. This was our original intent to harvest the red table beets which we had made adaptations on this piece of machinery to perform the correct job.

On November 14, and 15, 1997 we used the regular beet digger to harvest the five test plots making one round on each test plot. One round was made on each test bed which was one quarter of each bed, so the weights are as follows:

- 1.30 lbs. rate was 1060 lbs. X 4 is 4240 lbs.
- 2.42 lbs. rate was 1020 lbs. X 4 is 4080 lbs.
- 3.50 lbs. rate was 760 lbs. X 4 is 3040 lbs.
- 4. 67 lbs. rate was 420 lbs. X 4 is 1680 lbs.
- 5. 100lbs. rate was 340 lbs. X 4 is 1360 lbs.

Once again we will mention that if we would have been able to plant in May our yield would have been greater, having use of the better growing season. The comparison to the conventional way of the beet harvest in 20 inch rows was 15 ton per acre. Enclosed are the weight slips of the five test beds resulting in the opposite yield we had anticipated. This has happened in result of the short growing season not resulting in full maturity of the red table beets.

Our future plans resulting from this grant are testing more beet beds this year using the rates of 42 lbs. - 67 lbs. of seed per acre and the marketing of fresh red table beets and their top's which is much like spinach.

Enclosed is the summary of rainfall, temperatures and monitoring of the red table beets that we did during the project.

We found that many people where intersted in our project of growing the red table beets. Their is very few people in our area that grow this vegetable. We had various newspaper's contact us, enclosed one of the articles. We had a field day on August 17, 1997 with the children from the eighth grade class of Berlin, showing them the beet equipment used for the entire process of growing the red table beets. Enclosed is a copy of the thank you letter from the eighth grade class. We also recieved several phone calls from in state and out of state producers interested in our project and how we were succeeding. We feel this came from the articles that were written in the different newspapers. Also when we where harvesting the red table beets people would just stop and watch asking questions because they had never seen this type of machinery or operation.

Hopefully we will beable to supply the local canning companies with more red table beets instead of them shipping them in from as far as New York. The local canning companies have found their is a shortage of local producers.

This has been a rewarding, learning experience, and hope to beable to be working with you people in the following years to come.

Thank You,

**Steve Krentz**

THE SUMMARY OF RAINFALL, TEMPERATURES, AND MONITORING OF THE RED TABLE BEETS:

7-7-97 Temp. High 76 Low 54 Rain 1.1"  
Plowed the land for the test plot.  
7-8-97 Temp. High 62 Low 56 Rain 0  
7-9-97 Temp. High 81 Low 50 Rain 0 (disked land)  
7-10-97 Temp. High 86 Low 54 Rain 0 (finished land)  
7-11-97 Temp. High 90 Low 60 Rain 0.3"  
7-12-97 Temp. High 90 Low 60 Rain 0.3"

Fertilized and planted.

7-13-97 Temp. High 90 Low 60 Rain 0.3"  
7-14-97 Temp. High 84 Low 64 Rain 0  
7-15-97 Temp. High 89 Low 68 Rain 0  
7-16-97 Temp. High 92 Low 68 Rain 1.10"  
7-17-97 Temp. High 93 Low 67 Rain 0.1"  
7-18-97 Temp. High 90 Low 60 Rain 0  
7-19-97 Temp. High 90 Low 60 Rain 0  
7-20-97 Temp. High 90 Low 60 Rain 0

Red table beets have begun to sprout.

7-21-97 Temp. High 68 Low 60 Rain 2.7"  
7-22-97 Temp. High 78 Low 64 Rain 0.1"  
7-23-97 Temp. High 78 Low 56 Rain 0  
7-24-97 Temp. High 85 Low 62 Rain 0  
7-25-97 Temp. High 84 Low 68 Rain 0.7"

Red table beets are 2 inches high.

7-26-97 Temp. High 92 Low 65 Rain 0  
7-27-97 Temp. High 92 Low 65 Rain 0  
7-28-97 Temp. High 80 Low 53 Rain 0  
7-29-97 Temp. High 75 Low 51 Rain 0  
7-30-97 Temp. High 75 Low 51 Rain 0  
7-31-97 Temp. High 75 Low 51 Rain 0

8-1-97 Temp. High 76 Low 50 Rain 1.0"  
8-2-97 Temp. High 96 Low 60 Rain 0.3"  
8-3-97 Temp. High 86 Low 67 Rain 0.4"  
8-4-97 Temp. High 75 Low 50 Rain 0.4"  
8-5-97 Temp. High 78 Low 58 Rain 0  
8-6-97 Temp. High 77 Low 56 Rain 0

Fertilized the red table beets.

8-7-97 Temp. High 84 Low 55 Rain 0  
8-8-97 Temp. High 82 Low 55 Rain 0  
8-9-97 Temp. High 82 Low 55 Rain 0  
8-10-97 Temp. High 84 Low 56 Rain 0  
8-11-97 Temp. High 73 Low 58 Rain 0.9"  
8-12-97 Temp. High 64 Low 56 Rain 0.6"  
8-13-97 Temp. High 73 Low 43 Rain 0  
8-14-97 Temp. High 71 Low 58 Rain 0  
8-15-97 Temp. High 87 Low 66 Rain 1.0"  
8-16-97 Temp. High 84 Low 54 Rain 0.4"

Took picture of beet beds that we submitted to you.

8-17-97 Temp. High 84 Low 52 Rain 0.4"  
8-18-97 Temp. High 68 Low 47 Rain 0.3"  
8-19-97 Temp. High 72 Low 51 Rain 2.2"  
8-20-97 Temp. High 63 Low 53 Rain 1.1"  
8-21-97 Temp. High 68 Low 49 Rain 0.9"  
8-22-97 Temp. High 70 Low 50 Rain 0  
8-23-97 Temp. High 74 Low 56 Rain 1.0"  
8-24-97 Temp. High 63 Low 54 Rain 1.5"  
8-25-97 Temp. High 78 Low 57 Rain 0.3"  
8-26-97 Temp. High 84 Low 58 Rain 0

Water standing in red table beet field.

8-27-97 Temp. High 85 Low 53 Rain 0  
 8-28-97 Temp. High 73 Low 52 Rain 0  
 8-29-97 Temp. High 78 Low 58 Rain 0.2"  
 8-30-97 Temp. High 67 Low 58 Rain 0.5"  
 8-31-97 Temp. High 90 Low 57 Rain 1.0"  
 9-1-97 Temp. High 85 Low 56 Rain 0.1"  
 9-2-97 Temp. High 70 Low 54 Rain 0  
 9-3-97 Temp. High 66 Low 37 Rain 0  
 9-4-97 Temp. High 73 Low 44 Rain 0  
 9-5-97 Temp. High 80 Low 54 Rain 0  
 9-6-97 Temp. High 80 Low 54 Rain 0  
 9-7-97 Temp. High 80 Low 54 Rain 0  
 9-8-97 Temp. High 70 Low 54 Rain 0  
 9-9-97 Temp. High 69 Low 49 Rain 0.1"  
 9-10-97 Temp. High 70 Low 46 Rain 0.2"  
 9-11-97 Temp. High 70 Low 40 Rain 0  
 9-12-97 Temp. High 80 Low 44 Rain 0  
 9-13-97 Temp. High 79 Low 60 Rain 0.2"  
 9-14-97 Temp. High 80 Low 54 Rain 0  
 9-15-97 Temp. High 84 Low 63 Rain 0  
 9-16-97 Temp. High 80 Low 58 Rain 0.9"  
 9-17-97 Temp. High 75 Low 48 Rain 0

Eighth grade students visited the farm.

9-18-97 Temp. High 82 Low 70 Rain 0  
 9-19-97 Temp. High 84 Low 62 Rain 0  
 9-20-97 Temp. High 58 Low 34 Rain 0  
 9-21-97 Temp. High 67 Low 42 Rain 0  
 9-22-97 Temp. High 63 Low 48 Rain 0  
 9-23-97 Temp. High 70 Low 35 Rain 0  
 9-24-97 Temp. High 71 Low 52 Rain 1.5"  
 9-25-97 Temp. High 78 Low 42 Rain 0  
 9-26-97 Temp. High 72 Low 46 Rain 0  
 9-27-97 Temp. High 72 Low 58 Rain 0  
 9-28-97 Temp. High 74 Low 56 Rain 0.2"  
 9-29-97 Temp. High 63 Low 54 Rain 0  
 9-30-97 Temp. High 69 Low 30 Rain 0

First frost, not a killing frost.

10-1-97 Temp. High 68 Low 37 Rain 0  
 10-2-97 Temp. High 80 Low 46 Rain 0  
 10-3-97 Temp. High 85 Low 62 Rain 0  
 10-4-97 Temp. High 83 Low 46 Rain 0  
 10-5-97 Temp. High 86 Low 44 Rain 0.9"  
 10-6-97 Temp. High 83 Low 56 Rain 0  
 10-7-97 Temp. High 81 Low 59 Rain 0  
 10-8-97 Temp. High 80 Low 57 Rain 0.1"  
 10-9-97 Temp. High 64 Low 33 Rain 0  
 10-10-97 Temp. High 78 Low 40 Rain 0  
 10-11-97 Temp. High 76 Low 64 Rain 0  
 10-12-97 Temp. High 70 Low 58 Rain 0  
 10-13-97 Temp. High 56 Low 31 Rain 0  
 10-14-97 Temp. High 43 Low 36 Rain 0  
 10-15-97 Temp. High 63 Low 40 Rain 0  
 10-16-97 Temp. High 63 Low 28 Rain 0  
 10-17-97 Temp. High 63 Low 28 Rain 0  
 10-18-97 Temp. High 70 Low 40 Rain 0  
 10-19-97 Temp. High 50 Low 29 Rain 0

Killing frost.

10-20-97 Temp. High 50 Low 28 Rain 0  
 10-21-97 Temp. High 41 Low 27 Rain 0  
 10-22-97 Temp. High 42 Low 28 Rain 0  
 10-23-97 Temp. High 40 Low 30 Rain 0  
 10-24-97 Temp. High 32 Low 27 snow

10-25-97 Temp. High 33 Low 23 Rain 0  
 10-26-97 Temp. High 32 Low 30 snow  
 10-27-97 Temp. High 31 Low 30 snow  
 10-28-97 Temp. High 34 Low 32 Rain 0  
 10-29-97 Temp. High 36 Low 34 Rain 0  
 10-30-97 Temp. High 42 Low 36 Rain 0  
 10-31-97 Temp. High 44 Low 35 Rain 0  
 10-1-97 Temp. High 46 Low 37 Rain 0  
 11-2-97 Temp. High 46 Low 38 Rain 0.5"  
 11-3-97 Temp. High 48 Low 42 Rain 0.9"  
 11-4-97 Temp. High 46 Low 40 Rain 0.5"  
 11-5-97 Temp. High 47 Low 42 Rain 0  
 11-6-97 Temp. High 48 Low 44 Rain 0  
 11-7-97 Temp. High 44 Low 42 Rain 0  
 11-8-97 Temp. High 45 Low 35 Rain 0  
 11-9-97 Temp. High 40 Low 32 Rain 0  
 11-10-97 Temp. High 42 Low 32 Rain 0  
 11-11-97 Temp. High 37 Low 31 Rain 0  
 11-12-97 Temp. High 32 Low 28 Rain 0  
 11-13-97 Temp. High 33 Low 32 Rain 0  
 11-14-97 Temp. High 42 Low 37 Rain 0  
 11-15-97 Temp. High 52 Low 44 Rain 0

On th 14th and 15th we harvested the red table beets.