

# Cordon Trellis Method for Currant and Gooseberries

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In Wisconsin and adjacent states, currants and gooseberries (two closely related fruit crops) are generally grown without trellises, as extension publications recommend. However, in untrellised plantings harvest is very time-consuming, fruit size is small, fruit often lay on the ground causing them to rot or be dirty, and weed control is complicated. In the Netherlands, where there is a large commercial gooseberry and currant industry, fresh-market growers use a cordon trellis system to train their plants. In this system, each plant is trained to 1-3 permanent vertical stems (the “cordons”), with fruit borne on short branches from the cordons. The fruiting branches are replaced annually. This method requires extra labor and cost to establish a trellis and train the plants, but it reportedly reduces the labor needed for harvest and weeding, keeps fruit off the ground, and increases fruit size and quality. However, the cordon trellis system is not well known in the United States and it has not been systematically trialed here.



Steven Mackay, then with Cornell Cooperative Extension in New York State, travelled to the Netherlands to learn about the cordon trellis method used there. His observations were published in the New York Fruit Quarterly Summer 2005 issue, available online at <https://nyshs.org/summer-2005/>, and we recommend that article to anyone interested in the technique.

We have established plantings of four currant varieties and four gooseberry varieties using both cordon-trellised and untrellised systems. Our goals are to compare the material costs, labor time, yield, and fruit size for both systems. This report summarizes observations during the first growing season of the trial. We will continue the trial for several additional seasons.

**Experimental Design and Field Layout.** This research is being conducted using organic growing methods on our certified organic farm in Belmont, Lafayette County, Wisconsin. The soil type is an Ashdale silt loam.

We planted eight rows, each 306' long: four rows of currant and four of gooseberry. Each row has six feet of border plants at each end, from which data was not collected. The remaining 288' of each row is divided into 12 plots, each 24' long. The entire experimental area is divided into 3 equal sized blocks based on topography and fertility differences, with one-third of each row in each block, as shown in Table 1. We planted four varieties each of currant and gooseberry, shown in Table 2. We chose these varieties for fresh market growing based on our past experience and recommendations from nurseries, researchers, and other growers in the Upper Midwest. There are two experimental treatments: cordon-trellised and untrellised. Within each block, varieties and treatments were assigned randomly to plots. For each crop, there are 48 plots (16 plots per block). Each combination of variety and treatment is represented twice in each block.



Rows are spaced 10' apart, with a 4' sod aisle (creeping red fescue and white clover) between rows. After planting the berry plants, we laid a three foot wide, 3.2 oz/square yard, woven landscape fabric on each side of each row (for weed control) and anchored it with sod staples, forming a mulched strip six feet wide in total. We laid a 15 mil drip tape along each row on top of the landscape fabric. Plants were planted 3 feet apart in untrellised plots and eighteen inches apart in trellised plots.

Commercial availability of *Ribes* planting stock is limited, and we were forced to obtain our stock from two different sources, as shown in Table 2. We purchased Black Velvet and Captivator gooseberries as bareroot bushes from Indiana Berry and Plant Company, but we purchased the other six varieties as plugs from Nourse Farms. The plugs from Nourse Farms were much smaller than the bareroot plants from Indiana Berry; and we received and planted the Nourse plants several weeks later than those from Indiana Berry and Plant Company. The Black Velvet and Captivator plants remained larger throughout the first growing season.

Table 1. Experimental Plot Layout (Not to scale). Each plot is 24' in length, with the exception of border plots at the end of rows, which are 6' in length. The abbreviation in each cell refers to the variety (B=Blanka, JVT=Jonkheer van Tets, PC=Pink Champagne, R=Rovada, BV=Black Velvet, CAP=Captivator, HR=Hinnomaki Red, TIX=Tixia) and treatment (T=Trellised, UT=Untrellised)

Row:	Crop:		Block 1				Block 2				Block 3				
1	Currant	Border	PC-T	B-UT	PC-T	JVT-UT	B-UT	PC-T	R-T	R-UT	JVT-UT	R-T	JVT-T	PC-T	Border
2		Border	B-T	R-UT	B-T	PC-UT	JVT-UT	PC-UT	PC-UT	JVT-T	R-UT	R-T	PC-UT	B-UT	Border
3		Border	R-T	PC-UT	B-UT	R-UT	B-T	R-T	R-UT	PC-T	JVT-T	B-T	R-UT	JVT-UT	Border
4		Border	JVT-T	R-T	JVT-T	JVT-UT	B-T	JVT-T	B-UT	JVT-UT	B-UT	PC-T	PC-UT	B-T	Border
5	Gooseberry	Border	BV-T	HR-T	HR-T	BV-UT	HR-T	CAP-T	TIX-UT	CAP-UT	HR-T	TIX-UT	BV-UT	TIX-UT	Border
6		Border	TIX-UT	CAP-T	TIX-UT	CAP-UT	BV-T	BV-UT	TIX-T	BV-T	BV-T	BV-T	CAP-T	HR-UT	Border
7		Border	HR-UT	TIX-T	HR-UT	BV-UT	CAP-UT	HR-UT	CAP-T	HR-T	HR-T	TIX-T	CAP-T	CAP-UT	Border
8		Border	BV-T	TIX-T	CAP-UT	CAP-T	TIX-T	HR-UT	BV-UT	TIX-UT	TIX-T	BV-UT	CAP-UT	HR-UT	Border

Table 2. Varieties Grown in our Trial

Crop	Variety	Source	Material	Date Planted In Field
Gooseberry	Black Velvet	Indiana Berry & Plant Company	Bareroot bush	4/22/2020
	Captivator	Indiana Berry & Plant Company	Bareroot bush	4/22/2020
	Hinnomaki Red	Nourse Farms	Small Plug	5/13/2020
	Tixia	Nourse Farms	Small Plug	5/13/2020
Currant	Blanka	Nourse Farms	Small Plug	5/13/2020
	Jonkheer van Tets	Nourse Farms	Small Plug	5/13/2020
	Pink Champagne	Nourse Farms	Small Plug	5/13/2020
	Rovada	Nourse Farms	Small Plug	5/13/2020

**Trellis Construction and Plant Training.** The overall premise of the cordon trellis system is that each plant is trained to one or more permanent vertical stems (the cordons). Fruit are produced on short horizontal branches off the cordon, and these branches are renewed each year by being pruned off after fruit ripen. We followed the Dutch practice of training gooseberry plants to a single cordon, but currant plants to three cordons.

Our trellis was constructed in June 2020, after planting, using Best Angle brand angle iron stakes (1-1/2" wide x 1-1/2" wide x 8' tall; Best Angle model PB496-OR) each driven 2.5 feet into the ground and spaced six feet apart within the row. Two rows of 12.5 gauge high-tensile wire run down the row, one about 5-1/2 feet above the ground, and the other at six inches above the ground, and are fastened to the stakes with wire ties. At each end of each row, the trellis is braced with an angled stake and a ground screw as shown in Figure 1. At the location of each vertical cordon, a vertical 1/2-inch bamboo stake is placed between the two wires and fastened to the wires using pole clips (purchased from Peach Ridge Orchard Supply). We fastened the cordons to the bamboo stakes using plant tie tape applied with a Max-Tapener tool.

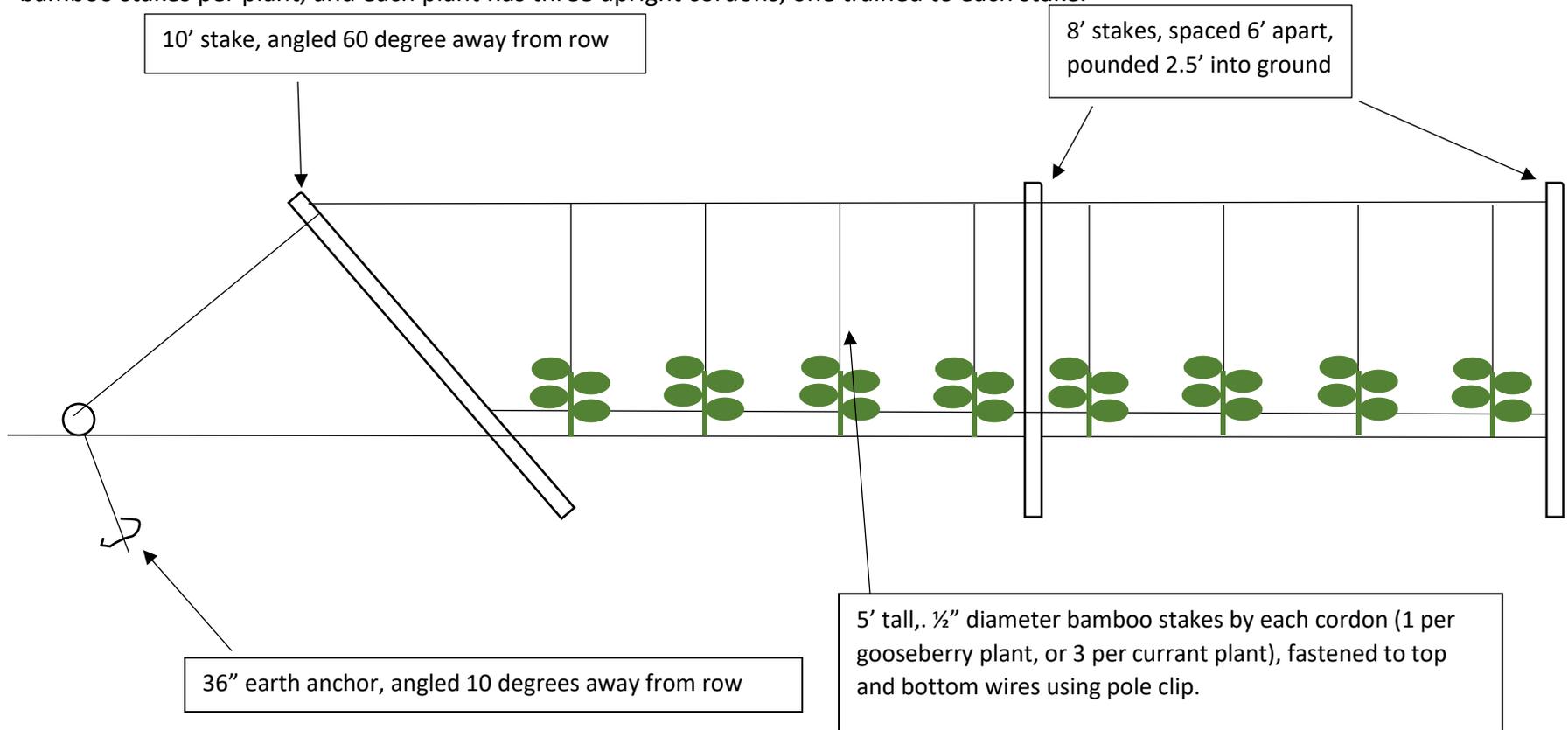
Table 3 shows the specific dates and activities performed in trellised plots during 2020: the overall goal was to develop the vertical cordons and allow branches to grow from the cordons, while removing any new shoots which originated near the soil surface and shortening long branches off the cordon which competed with the cordon. No pruning was performed during the first growing season in untrellised plots.

Table 3. Training and trellising activities performed in 2020.



Date	Activity
27-Apr	Black Velvet and Captivator gooseberries only: Shortly after planting, pruned to 1 cordon (vertical stem) per plant and remove any larger branches from the cordon (but left very short branches)
2-Jun	Currants: pruned to four shoots per plant (three cordons plus one backup shoot)
4-Jun	Gooseberries: On Black Velvet and Captivator, pruned off any new shoots competing with the cordon. Tixia and Hinnomaki Red plants were barely breaking bud at this time.
2-Jul	Tied cordons to bamboo stakes.
6-Jul	Black Velvet and Captivator gooseberries only: Pruned off vigorous shoots originating below or near the soil surface.
21-Jul	Tied cordons to bamboo stakes.
11-Aug	Tied cordons to bamboo stakes.
11-Aug	Gooseberries: Pruned off vigorous low branches originating near the soil surface that were competing with cordon; also tipped back upper branches competing with leader.
17-Aug	Pink Champagne currants. This variety had many vigorous branches off the cordons. We cut back these branches to short stubs

Figure 1. Trellis Construction, showing one end of a row of trellised gooseberry plants. Trellis for currant plants is identical except there are three bamboo stakes per plant, and each plant has three upright cordons, one trained to each stake.



**Other Planting Care.** We mowed aisles between the rows approximately weekly during the growing season. We drip irrigated plants as needed. We hand weeded as needed when weeds emerged between the two strips of landscape fabric laid next to each row. In spring we removed flowers and developing fruitlets from all plants.

**Pests.** Anthracnose leaf spot affected all gooseberry varieties, but spotting and defoliation was most severe on Captivator. This disease has been common on our farm and others in the region and is a major barrier to gooseberry cultivation. Powdery Mildew infected several currant plants. Currant spanworms were found on June 12 on several plants purchased from Nourse Farms; these caterpillars hatch from eggs laid on stems the previous year, and the plants were presumably infested while at the nursery in 2019. Oblique-banded leafroller larvae were seen feeding on scattered plants on July 15. A small amount of Japanese beetle damage was noted on July 21.



**Labor and Materials Costs.** We tracked time and expenses closely, and the following tables shows all labor time and materials for trellised and untrellised plants during the 2019 and 2020 seasons (some labor time was spent in 2019 on preplant site preparation). On a per acre basis, trellised plantings required 428-500 hours of labor, whereas the untrellised plantings needed only 244-247 hours. Approximately two-thirds of the additional labor in trellised plantings was for trellis construction; the remainder was for pruning and training, and planting (trellised plots are planted at a higher density than untrellised plots and thus required more planting time). Costs for plants and materials ranged from \$9,263-\$11,399 per acre in our untrellised plots, but were \$23,014-\$27,285 pre acre in trellised plots; the additional costs in trellised plots was due to the cost of trellis (\$6,085 per acre) and the higher cost of plants (an additional \$7,665-\$9,801 per acre was required to purchase plants in the trellised system because of the higher plant density). To a rough approximation, therefore trellised plots required twice the labor and materials as untrellised plots in the preplant year and first season after planting. It remains to be seen whether the future advantages of the cordon trellising method will justify the substantial upfront costs.

*This publication was supported by the Specialty Crop Block Grant Program at the U.S. Department of Agriculture through grant AM190100XXXXG005. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the USDA.*

Table 4. Labor and materials costs for currant plantings.

	Currant									
	Blanka		Jonkheer van Tets		Pink Champagne		Rovada		All varieties, average	
	Untrellised	Trellised	Untrellised	Trellised	Untrellised	Trellised	Untrellised	Trellised	Untrellised	Trellised
Labor Time, hours per 144' row:										
Deer Fencing Installation	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Field Preparation	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Irrigation, Apply	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Irrigation, Set up	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03
Mow Between Rows	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Mulch	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91
Weed	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
Other	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Planting	0.73	1.46	0.73	1.46	0.73	1.46	0.73	1.46	0.73	1.46
Trellis Construction	0.00	4.19	0.00	4.19	0.00	4.19	0.00	4.19	0.00	4.19
Pruning, training, and defruiting plants	0.05	1.03	0.08	1.17	0.15	2.21	0.00	0.62	0.07	1.26
Total Time, Hours per 144' row feet	8.15	14.58	8.17	14.72	8.24	15.75	8.09	14.16	8.16	14.80
Total Time, converted to hours per acre	246.41	441.07	247.18	445.22	249.26	476.55	244.76	428.48	246.90	447.83
Materials costs, per 144' row:										
Trellis	\$0.00	\$297.86	\$0.00	\$297.86	\$0.00	\$297.86	\$0.00	\$297.86	\$0.00	\$297.86
Landscape Fabric & Staples	\$41.14	\$41.14	\$41.14	\$41.14	\$41.14	\$41.14	\$41.14	\$41.14	\$41.14	\$41.14
Irrigation	\$11.67	\$11.67	\$11.67	\$11.67	\$11.67	\$11.67	\$11.67	\$11.67	\$11.67	\$11.67
Plants	\$253.40	\$506.80	\$253.40	\$506.80	\$253.40	\$506.80	\$253.40	\$506.80	\$253.40	\$506.80
Total Cost, per 144' row feet	\$306.21	\$857.48	\$306.21	\$857.48	\$306.21	\$857.48	\$306.21	\$857.48	\$306.21	\$857.48
Total Cost, per acre	\$9,263	\$25,939	\$9,263	\$25,939	\$9,263	\$25,939	\$9,263	\$25,939	\$9,263	\$25,939

Table 5. Labor and materials costs for gooseberry plantings.

Labor Time, Hours per 144' row:	Gooseberry									
	Black Velvet		Captivator		Hinnomaki Red		Tixia		All varieties, average	
	Untrellised	Trellised	Untrellised	Trellised	Untrellised	Trellised	Untrellised	Trellised	Untrellised	Trellised
Deer Fencing Installation	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Field Preparation	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Irrigation, Apply	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Irrigation, Set up	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03
Mow Between Rows	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Mulch	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91
Weed	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
Other	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Planting	2.66	5.33	2.66	5.33	0.73	1.46	0.73	1.46	1.70	3.39
Trellis Construction	0.00	4.19	0.00	4.19	0.00	4.19	0.00	4.19	0.00	4.19
Pruning, training, and defruiting plants	0.11	2.54	0.30	2.97	0.00	1.14	0.00	0.88	0.10	1.88
Total Time, Hours per 144' row feet	8.20	16.09	8.39	16.52	8.09	14.68	8.09	14.43	8.19	15.43
Total Time, converted to hours per acre	247.93	486.69	253.82	499.63	244.76	444.18	244.76	436.50	247.82	466.75
Materials costs, per 144' row:										
Trellis	\$0.00	\$201.16	\$0.00	\$201.16	\$0.00	\$201.16	\$0.00	\$201.16	\$0.00	\$201.16
Landscape Fabric & Staples	\$41.14	\$41.14	\$41.14	\$41.14	\$41.14	\$41.14	\$41.14	\$41.14	\$41.14	\$41.14
Irrigation	\$11.67	\$11.67	\$11.67	\$11.67	\$11.67	\$11.67	\$11.67	\$11.67	\$11.67	\$11.67
Plants	\$324.00	\$648.00	\$324.00	\$648.00	\$253.40	\$506.80	\$303.80	\$607.60	\$301.30	\$602.60
Total Cost, per 144' row feet	\$376.81	\$901.98	\$376.81	\$901.98	\$306.21	\$760.78	\$356.61	\$861.58	\$354.11	\$856.58
Total Cost, per acre	\$11,399	\$27,285	\$11,399	\$27,285	\$9,263	\$23,014	\$10,788	\$26,063	\$10,712	\$25,911