

Dimensions and Costs of Polyethylene, Paper and Biodegradable Plastic Mulch

Farmers use mulch to control weeds, conserve soil moisture and help improve crop yield. Information on mulch roll length, thickness, weight, and cost can help farmers determine which type of mulch may be best suited for their farm. Table 1 compares this information for polyethylene, paper and biodegradable plastic mulch. Table 2 provides information regarding the number of bed feet per acre based on the distance between bed centers. This information is used to calculate the number of rolls of mulch that would be needed per acre based on roll length (Table 3). Short roll length increases the cost of application since a new roll will need to be placed on the mulch laying machine more often.

Table 1. Size of mulch rolls, purchase costs, and suitability for machine laying.

	Polyethylene	Paper	'Biodegradable' plastic
Available roll length ¹	Up to 4000 ft	Up to 750 ft	Up to 6000 ft
Available roll width ¹	3-5 ft	2-4 ft	3-5 ft
Roll thickness ¹	0.5 - 1 mil	1.5 mil	0.5 - 1.5 mil
Purchase cost (1000 ft) ¹	\$25-\$65	\$160-\$390	\$55-\$190
Weight (1000 ft) ¹	9 - 21 lb	90 lb	15 - 35 lb
Machine application	Yes	Yes	Yes
Allowed for certified organic production	Yes	Yes ²	No

¹Information is from mulch distributor websites and includes most commonly used dimensions.

²Not all paper mulch products are allowed for use in certified organic production; check with your certifier prior to use of any product to ensure it is compliant.

Table 2. Length (ft) of mulch needed per acre based on bed spacing (ft, center-to-center).

Spacing (bed center-to-center)	Production Area			
	1 acre	3 acres	5 acres	10 acres
5 ft	8,712	26,136	43,560	87,120
6 ft	7,260	21,780	36,300	72,600
7 ft	6,223	18,669	31,115	62,230
8 ft	5,445	16,335	27,225	54,450

Table 3. Number of rolls of mulch for 1 acre based on roll length and bed spacing (ft, center-to-center).

Roll Length (ft)	Spacing (bed center-to-center)			
	5 ft	6 ft	7 ft	8 ft
500	17.5 ¹	14.5	12.5	10.9
750	11.7	9.7	8.3	7.3
1000	8.8	7.3	6.3	5.5
3000	3.0	2.5	2.1	1.9
4000	2.2	1.9	1.6	1.4
6000	1.5	1.3	1.1	1.0

¹Number of rolls presented in fraction to help farmers to calculate total number of rolls for more than 1 acre.



Figure 1. Laying biodegradable mulch by machine (left); pumpkins grown with several different biodegradable mulch treatments at WSU Mount Vernon NWREC (right).

Mulches that are fully biodegradable can be tilled into the soil at the end of the season which eliminates the cost of their removal (Table 4). At the end of the annual vegetable growing season in our experimental plots, there was a significant amount of biodegradable plastic mulch left. We removed polyethylene and biodegradable plastic mulch from our plots to provide growers with complete information regarding the time for removal and amount of soil adhered to the mulch even though biodegradable mulch is envisioned to be tilled into the soil at the end of the season.

Table 4. Cost for removal of 1000 ft of mulch from the field and weight of mulch after removal.

	Polyethylene	Paper	'Biodegradable' plastic
Cost of labor for removal of 1000 ft of mulch from the field at the end of the growing season ¹	\$10	\$0	\$43
Weight of 1000 ft of mulch after removal from the field	84 lb	NA	70 lb
Amount of soil (% by weight) on mulch after removal at the end of the season ¹	Up to 80%	NA	50 – 80%

¹Information is based on results from a field experiment carried out at WSU Mount Vernon NWREC in 2015.

There are several plastic mulches on the market which claim to be biodegradable; this factsheet is not meant to endorse mulch products that are marketed as biodegradable nor does it imply that these mulch products actually biodegrade in farming systems.

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