

## Dimensions and Costs of Paper, Polyethylene 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.

	Paper	Polyethylene	'Biodegradable' plastic
Available roll length <sup>1</sup>	Up to 750 ft	Up to 4000 ft	Up to 6000 ft
Available roll width <sup>1</sup>	2-4 ft	3-5 ft	3-5 ft
Roll thickness <sup>1</sup>	1.5 mil	0.5 - 1 mil	0.5 - 1.5 mil
Purchase cost (1000 ft) <sup>1</sup>	\$160-\$390	\$25-\$65	\$55-\$190
Weight (1000 ft) <sup>2</sup>	90 lb	9 - 21 lb	15 - 35 lb
Machine application	Yes	Yes	Yes

<sup>1</sup> Information is from mulch distributor websites and includes most commonly used dimensions. Weight is the weight of only mulch, and does not include the weight of the cardboard tube used to roll the mulch; a standard cardboard tube of 3 inch inside diameter and 4 ft length weighs approximately 2.5 lbs.

**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



**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 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 <sup>1</sup>	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

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

**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 <sup>1</sup>	\$10	\$0	\$43
Weight of 1000 ft of mulch after removal from the field	84 lb <sup>2</sup>	NA	70 lb <sup>3</sup>
Amount of soil (% by weight) on mulch after removal at the end of the season <sup>1</sup>	Up to 80%	NA	50 – 80%

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

<sup>2</sup> Average weight of plastic mulch at the time of laying was 15.4 lb per 1000 ft.

<sup>3</sup> Average weight of four different biodegradable mulches at the time of laying was 17.5 lb per 1000 ft.

***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.***

**Written by:** Shuresh Ghimire ([shuresh.ghimire@wsu.edu](mailto:shuresh.ghimire@wsu.edu)) and Carol Miles ([milesc@wsu.edu](mailto:milesc@wsu.edu))  
 Department of Horticulture, Washington State University Northwestern Research and Extension Center  
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