Soil-Biodegradable Mulches: *Workshop*

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Presenter Notes **July 2020**

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Synopsis:
Soil-biodegradable mulches (BDMs) are increasingly used in agriculture to replace conventional plastic mulch. This is what we need to know to apply them.

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USDA United States Department of Agriculture National Institute of Food and Agriculture

Applying soil-biodegradable Mulch

This workshop series provides slide presentations on soil-biodegradable mulches (BDMs). These notes provide additional information for presenters. Numbers in the text correspond to the slides in each presentation. Information in this document was summarized from publications listed in the Reference section.

1. This presentation provides information on the methods used in applying BDMs with a mechanical mulch layer on either raised or flat planting beds.
2. BDMs are usually thinner than PE (polyethylene) mulch. Reducing the thickness of BDM reduces their cost and helps the BDM to biodegrade faster. Mechanical strength, measured as elongation, breaking force and split force are greater for PE than BDM (Fig. 1).
3. Preparing the bed for mulch laying requires several steps: a) till the soil; b) broadcast fertilizer if using; and c) lay

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mulch when soil conditions are conducive, that is, when soil is moist and free of clods.

4. Mulch and drip tape can be laid simultaneously (Fig. 2). Mulch is usually 3—5 ft in width; bed width and height are adjustable; release the tension on the roller bars that press down on the mulch before applying.
5. Mulch layers can be flat-bed (Fig. 3)
6. Raised bed (Fig. 4)
7. Or multiple beds wide as in this 3-row layer (Fig. 5)
8. The procedure for mulch laying is similar for all mulch layers. First feed the end of the mulch roll through the roller bar and reduce the tension so it can roll easily (Fig. 6). Pull the mulch under the guide wheels; the wheel(s) should rest lightly on the mulch or float just above it (Fig. 7).
9. Place the drip tape roll in the desired location (i.e. center of bed) and secure the roll. Shovel soil onto the end of the mulch at the end of the bed and on the sides under the wheel to keep the mulch in place before pulling it. Secure the drip tape at the end of the row.
10. Slowly drive the tractor forward, gradually increasing the speed until the same as for laying PE mulch. After laying a row, cut off the mulch from the roll and cut the drip tape. Secure the mulch at the end of the row by covering the mulch with soil (Fig. 8). If the mulch tears in the middle of laying a row, cover the rip with soil. Or if the ripping is across the bed, stop laying the mulch, pull the mulch off the roll to overlap about 1 foot with the mulch on the bed, and continue laying.
11. This (Table 1) shows the length of mulch needed for different production areas based on bed spacing.

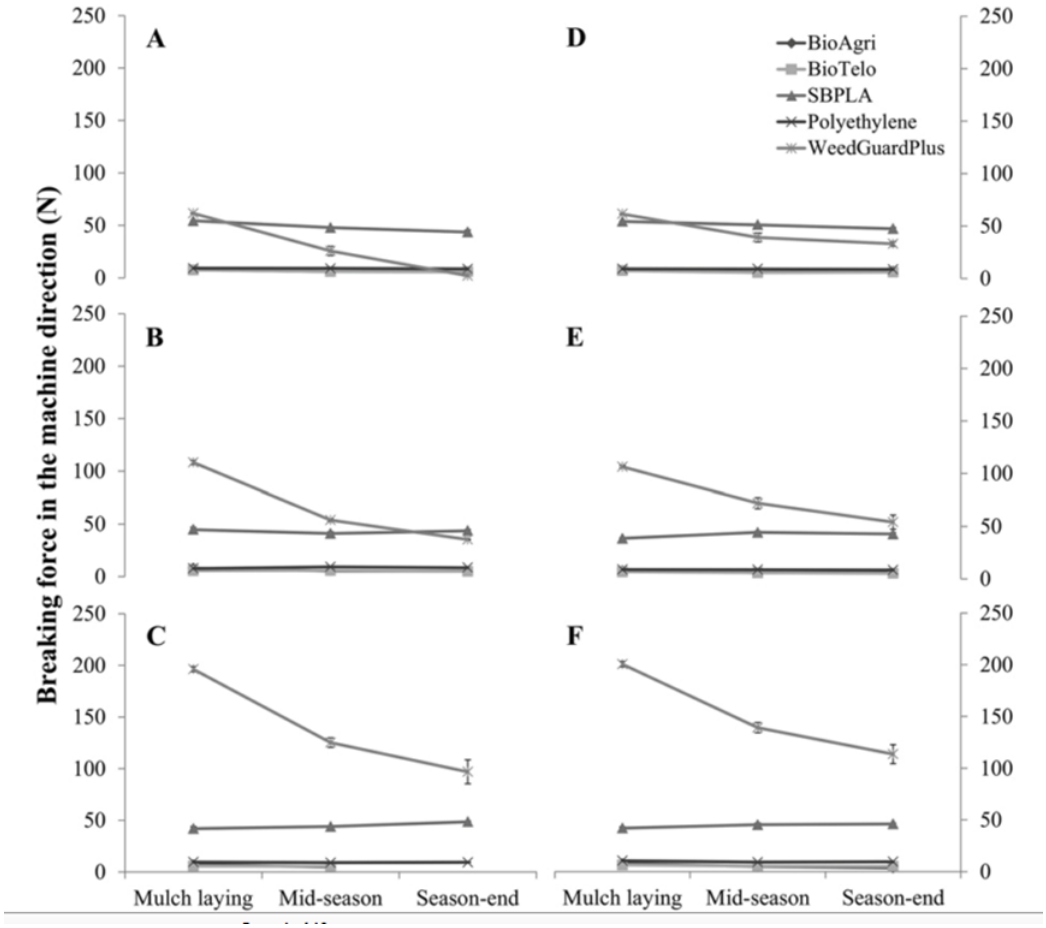

Figure 1. Comparison of BDM and PE mechanical strength.

Figure 2. Mulch and drip tape can be laid simultaneously; note the round drum of drip tape on the left above, and the roll of mulch on the right.

Figure 3. Flat-bed layer.

Figure 4. Raised-bed layer (RainFlo D2600).

Figure 5. Three-row layer (RainFlo D2600).

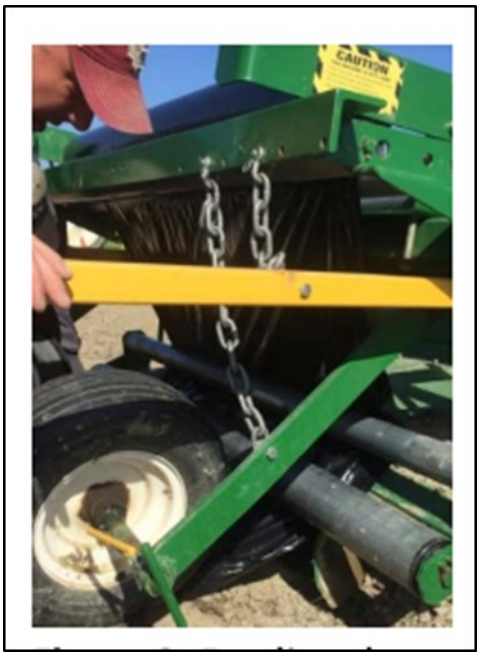

Figure 6. Feed mulch through roller bar; adjust tension.

Figure 7. Pull mulch under guide wheels.

Figure 8. Secure the mulch at the end of the row by covering mulch with soil.

Table 1. Length (ft.) of mulch needed per acre based on bed spacing (ft., center-to-center).

Bed spacing (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

Ghimire and Miles, 2016

Resources

These information resources provide background information and additional information to help you have a more thorough understanding of this topic. We encourage presenters to view each one so as to be better prepared for your presentation.

Cowan, J., A. Saxton, H. Liu, K.K. Leonas, D.A. Inglis, and C.A. Miles. 2016. Visual assessments of biodegradable mulch deterioration are not indicative of changes in mechanical properties. HortScience 51(3):245-254.

Dimensions And Costs Of Biodegradable Plastic And Polyethylene Mulches

http://vegetables.wsu.edu/Dimensions%20%26%20costs%20plastic%20and%20biodegradable%20mulch.pdf

Dimensions and Costs of Biodegradable Plastic and Polyethylene Mulches

https://s3.wp.wsu.edu/uploads/sites/2181/2017/06/FactSheet.CostandDimensions-2.pdf

Mechanically Laying Biodegradable Paper And Plastic Mulch

http://vegetables.wsu.edu/Laying%20BDM.pdf

Mechanically Laying Mulches In Tissue Culture Raspberry

https://s3.wp.wsu.edu/uploads/sites/2181/2017/06/WSU-Fact-Sheet-Mechanically-Laying-Mulches-in-Tissue-Culture-Raspberry.pdf

Video - A Guide To Laying And Tilling In Of Biodegradable Mulch

https://www.youtube.com/watch?v=aMjD4vbr9eA&feature=youtu.be