

Plastic covers and silage density: What's new and basic in making good silage?

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Losses During Silo Storage

- Dependent on exposure to oxygen
- Most important parameters:
 - Porosity/density of silage
 - Quality of surface sealing
 - Feed out rate



New Tool For Potentially Improving Bunker Density

- What is the value of adding a packing device to the packing tractor?



Formal Packing Device Trial

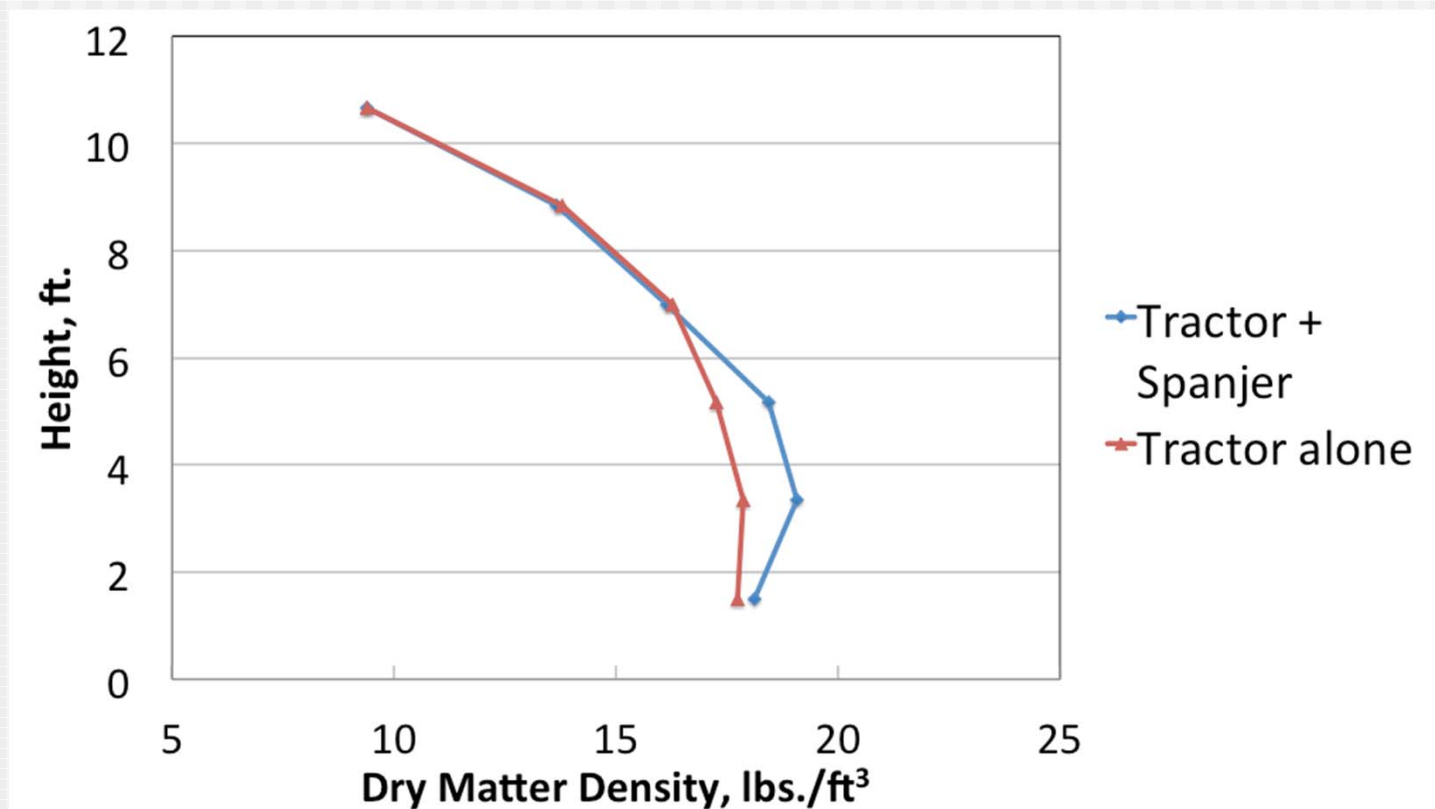


Procedure

- 2 bunkers (50 x 200 x 12 ft.), filled 1 week apart
- 3 Similar Tractors (30,000 lbs.)
 - 1 for spreading
 - 1 for packing each half
- Spanjer packer (10,000 lbs.) on 3-point hitch
- Alternate loads to each half of a bunker
- Corn silage

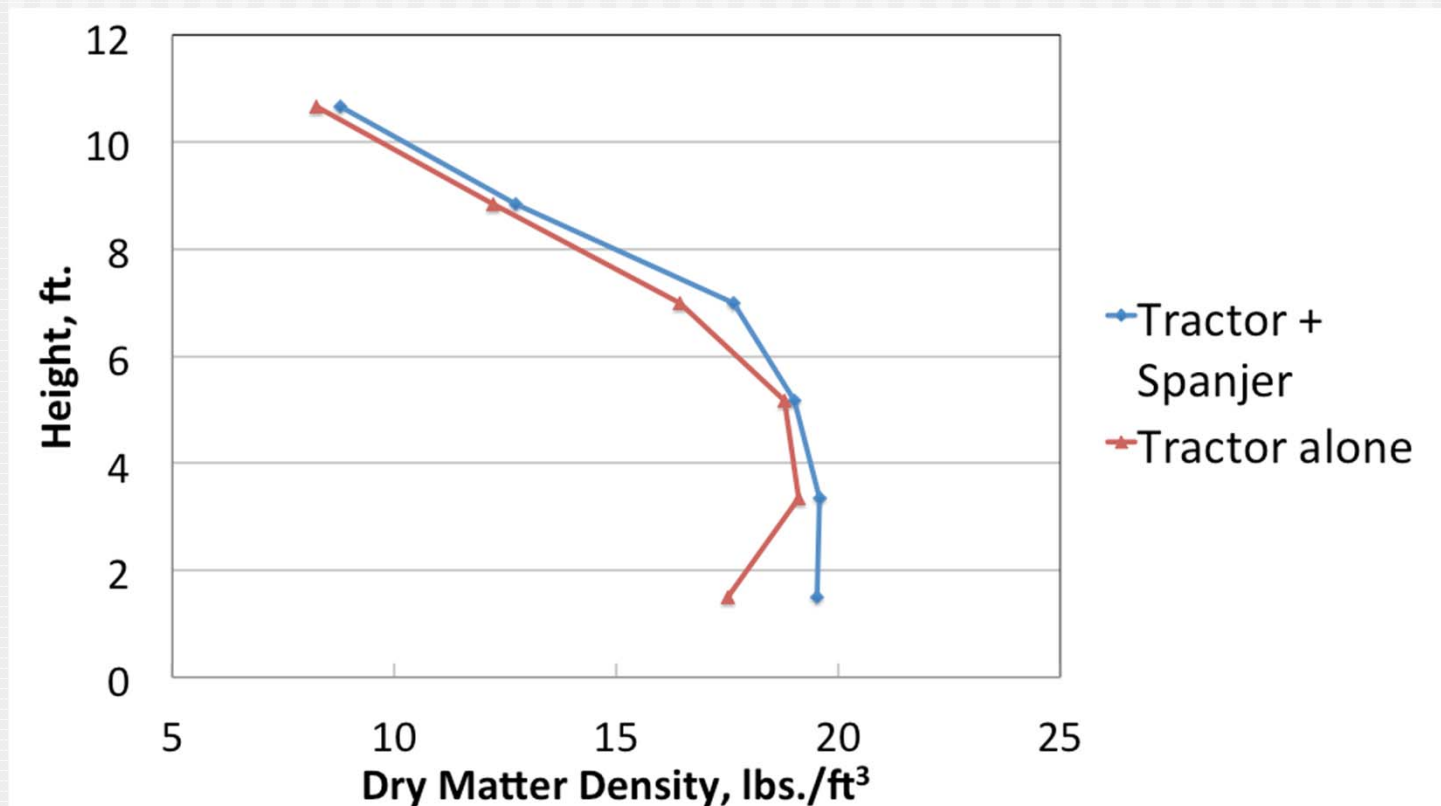


Face Core Densities – Bunker 1



0.4 lbs./ft³ improvement in density with Spanjer. However, the initial 3-point hitch set up limited Spanjer weight on the silage, transferring some Spanjer weight to the tractor.

Face Core Densities – Bunker 2



0.8 lbs. DM/ft³ improvement in density with Spanjer when 3-point hitch was set up properly.

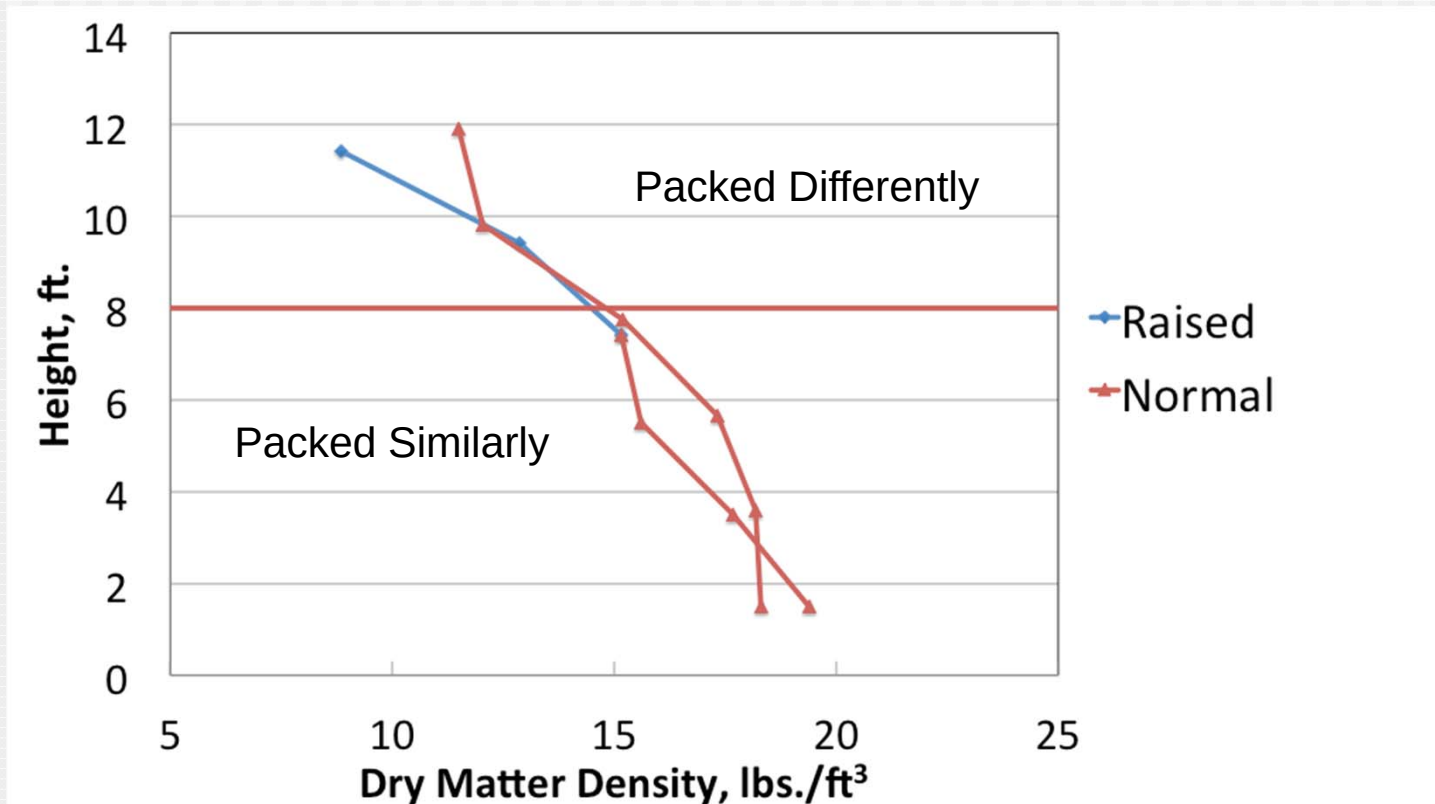
Informal Trial – Running With Spanjer Raised



Procedure

- 2 bunkers filled simultaneously with corn silage
- 1 packing tractor with a Spanjer packer alternating between the bunkers
- One bunker was packed using the Spanjer unit as intended.
- Other bunker packed normally with the Spanjer until 2/3 full; thereafter the Spanjer unit was carried on the 3-point hitch while packing.
- Packing times were not recorded.
- Face cores taken when bunkers were emptied.

Face Core Densities – Raised vs. Normal Operation



Increased density 18 in. below the top with Spanjer when run as designed, but difficult to know how much is real.

Summary of Experience with the Spanjer Packing Device

- Worked best when 3-point hitch allowed the Spanjer device to fully exert its weight while riding on the forage.
- Modest improvements in density (~0.8 lbs. DM/ft³)

Plastic Covers



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6 mil Black vs. 8.5 mil White



- Thicker white better by 5% points in 2 tests in top 6 inches
- Field crew liked working with the thicker white
 - Better in wind
 - Easier to walk on

White Plastic But Different Sides Up

- No significant differences in losses between black or white side up
- But more heat damage in top 1" when black side up

White up



Black up

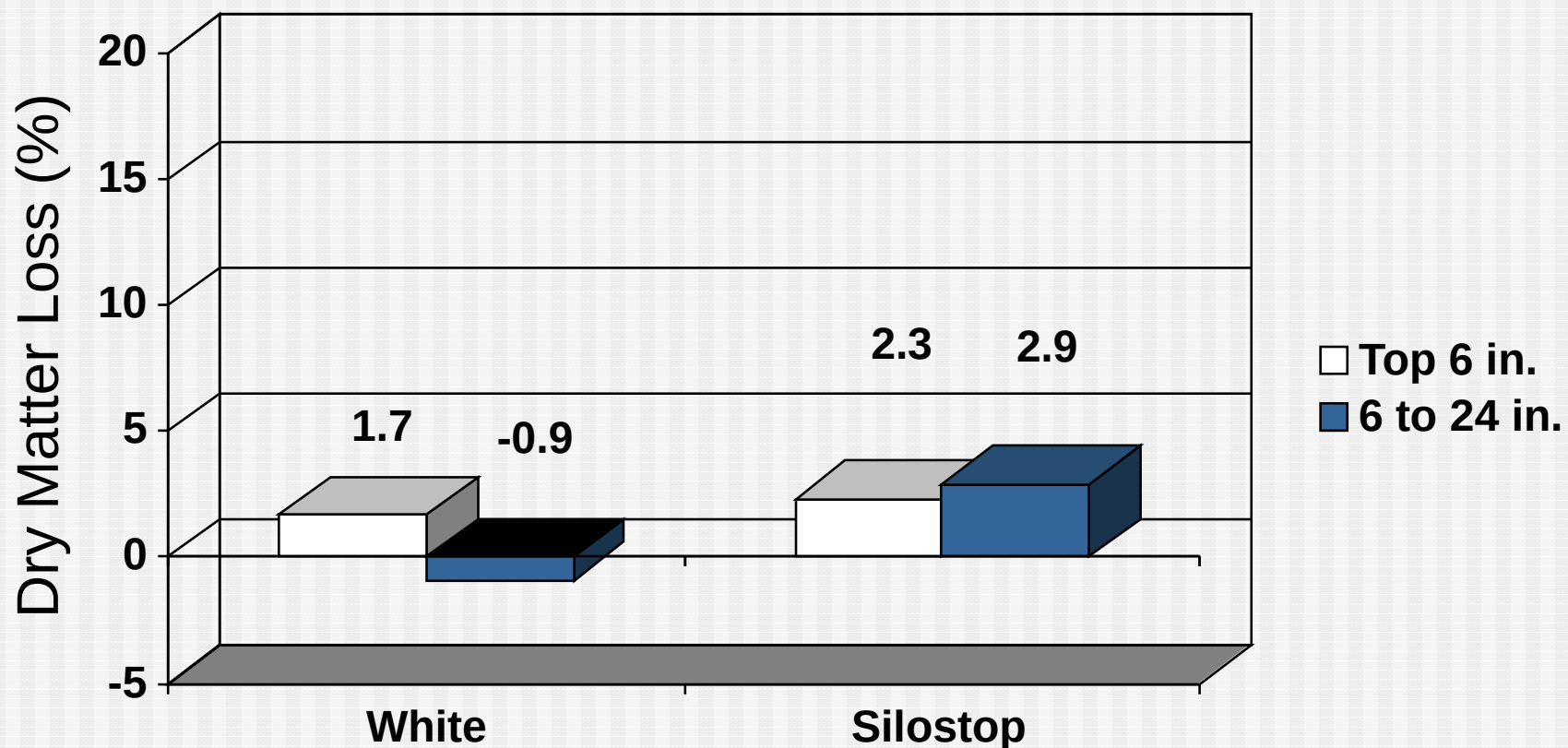
Oxygen Barrier Films



Worked with two companies' products:

- Silostop
- Raven FeedFresh

% DM Losses under the Middle of a Sheet - 2 Alfalfa Bunkers, Silostop



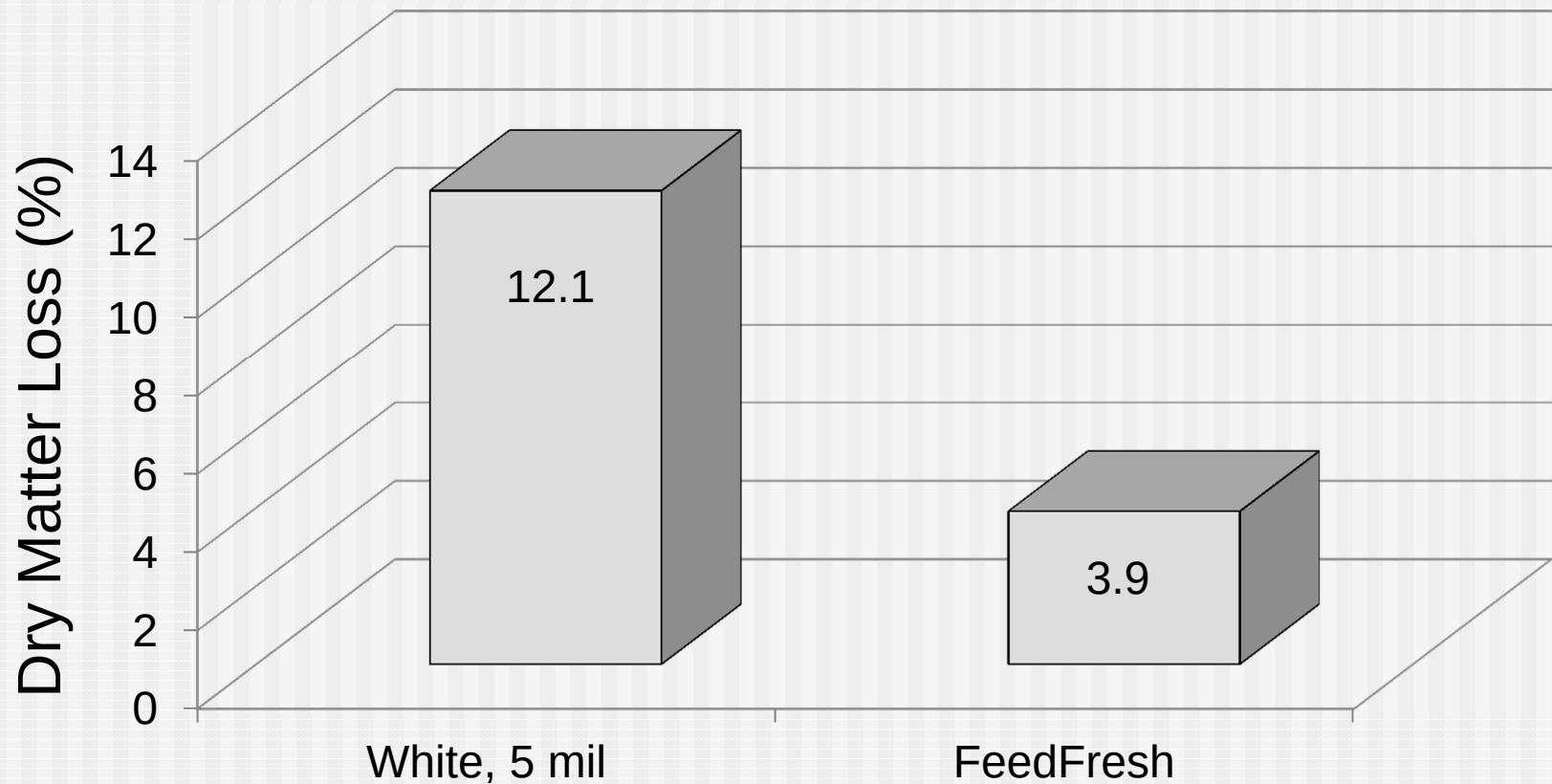
No significant difference between plastics but 8.5 mil white film (thicker than what most farmers use) and ...

Fermentation Products at Middle of Two Bunkers

	Depth, in.	pH	Lactic Acid	Acetic Acid	L:A
<i>Haylage</i>					
White	3	4.89	2.5	4.0	0.6
Silostop	3	4.82	4.5	2.2	2.1
White	9	4.82	4.5	1.7	2.6
Silostop	9	4.75	3.8	1.4	2.7
<i>Corn</i>					
White	3	4.02	3.2	1.6	2.0
Silostop	3	3.98	3.0	1.2	2.6
White	9	4.00	4.1	1.4	2.9
Silostop	9	3.97	3.9	1.2	3.1

Consistently better fermentation quality under Silostop.

% DM Loss in Top 6 in. with FeedFresh vs. 5 mil White



Summary of Plastic Films

- Oxygen barrier films, properly secured, can produce a surface free of mold and of the highest quality.
- Among normal polyethylene films, the thinner the film the greater the loss. Five-point difference between 6 and 8.5 mil in top 6 in.
- An 8.5 mil polyethylene approaches an oxygen barrier film relative to losses.

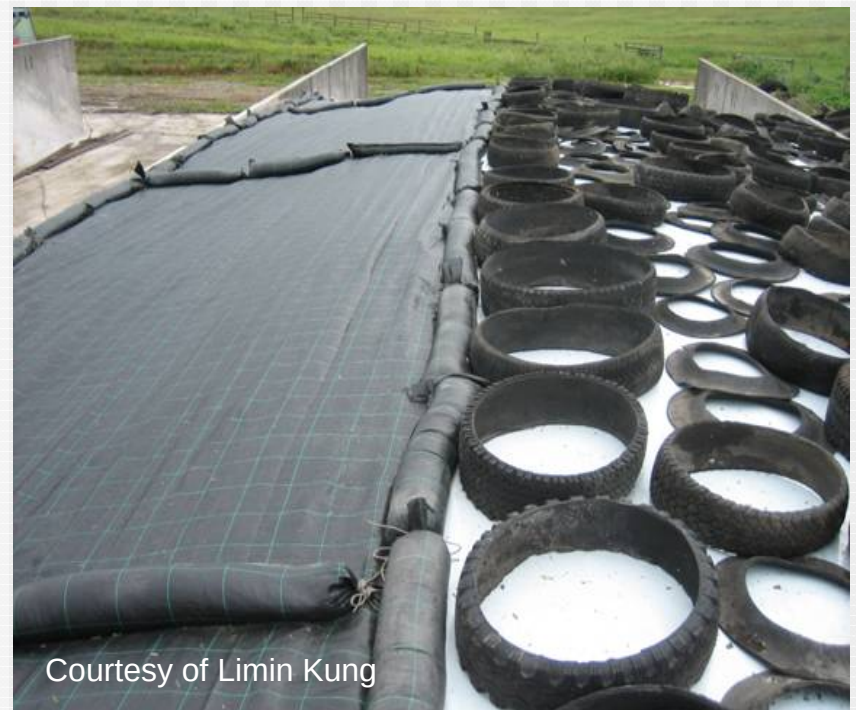
Film Quality Is Not Enough



- Left: two layers of white plastic and still pitching about 6" of spoiled silage
- Right: one layer of white plastic; no visible mold
- Moral: securing the plastic well is equally as important as choosing a good film.

Two Alternatives for Securing Plastic

- Tires touching tires/tire sidewalls
- Tarp anchored with gravel bags
 - At wall
 - At seams in plastic, tarps



Minimizing Shoulder Spoilage with Plastic on the Walls



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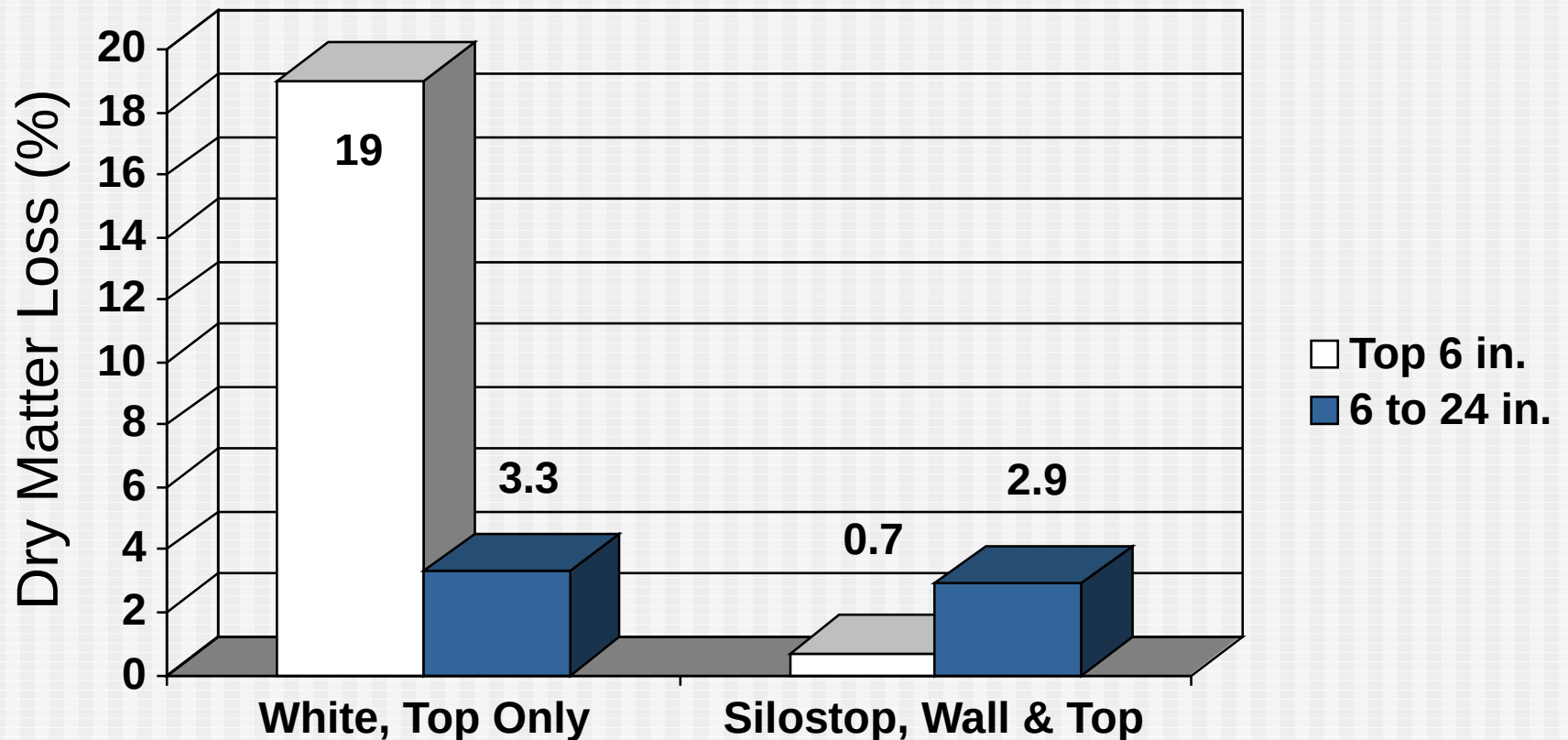
The Use of Wall Film

- Side-wall plastic
- Top sheet



Silostop

Estimated % DM Losses near the Wall - 2 Alfalfa Bunkers



Reduced spoilage near the wall in top 6 in. with Silostop.

Summary on Wall Film

- It is possible to greatly reduce shoulder losses, even eliminating moldy silage.
- While we have not studied regular polyethylene film as a wall covering, we have seen it work on various farms, both at the UW-Arlington farm and commercial farms.

Thank You for
Your Attention!

Questions?

