Mulching for Co-Management

O'AHU RESOURCE CONSERVATION & DEVELOPMENT COUNCIL

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COOPERATIVE EXTENSION
UNIVERSITY OF HAWAI'I AT MANOA

Co-management:
Refers to managing farms and their surrounding environments such that multiple goals are achieved: natural resource conservation *and* food safety.

Co-management practices:
Refers to those *best management practices* (BMPs) which meet objectives in both natural resource conservation and food safety.

Mulching: Applying plant residues or other suitable materials to cover soil

Mulching used around asparagus in Waialua, Oahu

How does mulching help?

Mulching covers and protects the soil, which improves erosion control and soil health. Improves water infiltration into the soil, reduces the risk of potentially contaminated runoff or irrigated water coming in contact with produce. Additionally, mulch may create habitat for biodiverse organisms which may suppress pathogen populations.

Functions

- ➔ Increased microbial biodiversity
- ➔ Increased water holding capacity
- ➔ Increased soil cover
- ➔ Increased organic matter/ microbial substrate

Best use: *Good for farms that need to reduce irrigation costs and improve soil health*

Benefits

...to food safety

- Balancing/suppressing populations of human pathogens
- Reduced need for irrigation resulting in reduced risk of potentially contaminated runoff

....to conservation

- Building soil carbon and health
- Improved drought resistance
- Reduced erosion

Practicality

the pros

- Helps reduce soil movement and tracking around the farm
- Helps to reduce need for irrigation water, reduces water cost

the cons

- High cost and labor to implement
- Concern of creating habitat for undesired pests such as slugs and snails

Literature Summary

- Plastic mulch reduced *Salmonella* contamination on lettuce leaves in contaminated soils, likely due to reduced contact between lettuce and soil (Honjoh 2014).
- Green waste and organic mat mulches reduced windborne dust erosion by 60-80% compared to bare-ground at wind speeds less than 16 mph (Qu 2018).
- Bacteria and E.coli can survive under mulch, with higher populations found under plastic and straw mulch than bare ground (Micallef et al. 2016; Xu et al. 2016).

References

Honjoh, K. I., Mishima, T., Kido, N., Shimamoto, M., and Miyamoto, T. 2014. Investigation of routes of *Salmonella* contamination via soils and the use of mulch for contamination control during lettuce cultivation. Food Science and Technology Research, 20(5), 961-969.

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Resources

1. Learn more about co-management: Wild Farm Alliance: Food safety and Conservation Resources
2. Learn more about food safety: Roots FSMA Guide & Produce Safety Alliance
3. Learn more about conservation practices and on-farm assistance opportunities: Oahu RC&D & CTAHR Extension

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