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ALMOND BOARD OF AUSTRALIA

MANAGING DUST AT HARVEST

KEY POINTS

- A clean and level orchard floor makes it easier to collect nuts and will reduce the amount of dust.
- Plan your passes to keep dust away from nearby roads and homes.
- If your sweeper head is set too low it will move an excessive amount of dirt into the windrow.
- If possible, only use wire tines on your sweeper.
- Reducing the amount of sweeper passes will also cut the amount of dust that's generated during harvest.
- Conditions vary, so fine tune your equipment instead of using a one-size-fits-all approach.
- Reducing harvester speeds will create less dust.

This factsheet has been adapted from research funded by the Almond Board of California. Faulkner, W.B., D. Downey, D.K. Giles, and S.C. Capareda. 2011. Evaluation of particulate matter abatement strategies for almond harvest. Journal of the Air and Waste Management Association 61: 409-417.

INTRODUCTION

Harvesting almonds can be a dusty job, but there are some steps you can take to look after yourself, your workers, neighbours and the community.

Orchard floor management

Clean orchard floors make dust management easier. Level orchard floors reduce excessive dirt movement by sweepers. This helps to recover more nuts and they will not get trapped in hollows on the orchard floor or be buried. Consider planting a cover crop. Even when mowed or sprayed before harvest it could help hold the soil.

Plan your route

Aim to blow dust back into the orchard using the tree canopy as a natural filter. The trees and their canopies can help capture dust before it reaches roads and homes. Plan your passes and travel direction to keep dust away from roads and homes. Consider wind direction when possible.

Go low, but not too low and keep sweeper head level

Don't set sweeper heads any lower than is necessary to recover the crop. Often, wire tines can be set up to 1.27cm off the ground and still do a good job sweeping. If set too low, the sweeping head will move an excessive amount of dirt into the windrow, increasing dust from the pickup machine substantially. Tilting the sweeper head can cause similar problems.

Image 1. A level sweeper with well positioned brushes creating minimal dust.

Use wire tines

If possible, only use wire tines on sweeper heads. Sweepers that use wire tines without rubber flaps can help reduce dust. Rubber flaps can also be removed from pick up belts on harvesters to reduce the amount of dirt collected.

Avoid extra sweeper passes

Use fewer blower passes when and where possible. One blower pass (up and back) instead of three can reduce the amount of dust produced by half.

Fine-tune settings

Blower spout adjustments can reduce dust. Instead of using one-size-fits-all settings consider making changes that take into account orchard conditions. Adding a berm brush to sweepers may improve performance in some conditions. Adjust the brush so it is just touching 1/3 to 1/4 of the area to be covered by the brush. Slow speed of the brush down so it isn't digging and moving excess dirt.

Slow down

Reducing harvester speeds will create less dust. A pickup speed of 2.4 kilometres per hour cuts dust by 50% compared to 4.8 kilometres per hour. Note how conditions change from orchard to orchard and from early to late harvest. Adjust ground speed to match conditions. In loose soil conditions, slower ground speed lets gravity do more of the work by separating dirt from the crop meaning harvester fans produce less dust. If crop is conditioned it sits up on top of the surface so it doesn't have to be dug out. Consider cleaning chain selection to allow more dirt to fall through.

Image 2. Modern cleaning chains (twin rod) on harvesters enable dirt to drop back onto the ground.

More tips for managing dust:

• If you are working with a harvesting contractor, discuss dust control practices before harvest. Agree beforehand on the expected balance of speed, productivity, and protecting workers, neighbours, and the environment from excessive almond harvest dust.

• Manage dust on unpaved roads. Reducing speeds, spreading gravel and using dust suppression products can help.

• In dry years, there's likely to be increased dust during harvest due to the lack of stored soil moisture and a reduced tree canopy will filter less dust.

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