



Oregon
Department
of Agriculture

SUMMARY OF THE 2010 FIELD-BURNING SEASON

**Oregon Department of Agriculture
Natural Resources Division
Smoke Management Program**



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Prepared By

**The Oregon Department of Agriculture
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1. Introduction

This summary is prepared annually by the Oregon Department of Agriculture (ODA) Smoke Management Program staff to report the statistics for each field-burning season.

2. Weather Discussion - Prepared by the Oregon Department of Forestry Weather Office

The Willamette Valley weather is a variable that presents ongoing challenges for efficient operation of the Smoke Management Program. Predicting weather patterns that will promote the rapid lifting and evacuation of smoke away from populated areas is an inexact and evolving science. Rapidly changing weather conditions, errors in computer model forecasts, eddies of smoke down mixing, and inefficient ignition procedures can all increase the potential of smoke impacts.

The summer of 2010 was noted for a lack of hot spells and for generally poor ventilation conditions across the Willamette Valley. Consequently, smoke impact hours increased compared with previous summers, even though the total number of acres burned decreased by more than 50 percent. The 2010 field-burning season was limited to the region of the northern Willamette Valley as defined in Senate Bill 528.

JUNE

June started with significantly cooler and wetter-than-normal conditions. The bulk of the month's rain fell during the first week with Salem receiving more than two inches. Salem received more than 150 percent of its normal monthly rainfall. Even with the last 10 days of the month finally bringing dryer and warmer weather, Salem's average monthly temperature was about four degrees below average (see Figures 1 and 2). The cool and damp weather delayed grass seed harvest, and as a result, no field burning was conducted.

JULY

Dry weather continued from late June through July with near-normal temperatures. Fields were not ready for open burning during the first half of July with some propane flaming conducted on July 20. Preparatory (prep) burning was conducted on the 21st, 22nd, and 26th without smoke impacts. The first open burning of the season commenced on July 28 with 21 acres and no impacts. Friday, July 30, 255 acres of open burning was conducted during the late afternoon with 1 hour of light smoke impact in Lyons.

AUGUST

Generally dry weather continued through August. During the afternoon of Monday, August 2, 1,406 acres of open burning was completed. The smoke evacuated to the east of the Willamette Valley, but there was not enough wind to push it quickly through the Cascades. That evening Lyons picked up 2 hours of heavy impact, 1 hour of moderate impact, and 2 hours of light impact. The smoke cleared from Lyons late the following morning. There was 209 acres of open burning on the 3rd, without producing smoke impacts. With wildfire smoke raising nephelometer readings on the 4th and 5th, there was no burning on the 4th; however, on the 5th, 817 acres of open burning was conducted with 2 hours of light impact and 1 hour of moderate impact in Lyons. No burning was accomplished on the 6th, but area nephelometer readings were still elevated due to wildfire smoke.

Some prep burning of 79 acres resulted in 1 hour of light smoke impact in Lyons on August 9. Prep burning on the 10th, 11th, and 12th did not result in any smoke impacts. No burning was done during the warm spell from the 13th through the 17th. Salem recorded five straight days with high temperatures at, or above, 90 degrees. Salem's high of 101 degrees on the 14th, was the warmest of the summer. On the 18th, a mostly dry marine push cooled temperatures back to normal and allowed for 1,621 acres of open burning in the afternoon. Unfortunately, the onshore surge was not strong enough to push the smoke east of the Cascades. Consequently, Lyons picked up 4 hours of moderate impact and 5 hours of light impact overnight. Smoke cleared from Lyons late the morning of the 19th; however, 57 acres of prep burning in the mid-afternoon caused another hour of moderate impact. All of the impacting smoke cleared from Lyons that evening.

No burning was conducted from the 20th through the 25th, with valley temperatures climbing back into the mid 90s on the 24th and 25th. Wildfire smoke significantly raised nephelometer readings across the region on the 25th. As cooler air came into the region, 52 acres of prep burning caused no smoke impacts on the 26th. Prep burning of 126 acres resulted in 1 hour of moderate and 1 hour of light smoke impact in Sweet Home on August 27.

One of the few weather patterns of the summer conducive to good smoke evacuation arrived on Sunday, August 29. Special permission was given for weekend field burning, and 3,131 acres of open burning was conducted that afternoon. Government Camp recorded 2 hours of light impact that evening, which was suspected to have been due to wildfires. No other impacts were recorded. Another 360 acres of open burning was conducted on the 30th with no smoke impacts.

SEPTEMBER

September was slightly warm and wet without significant hot weather. The warmest days were the 2nd and 3rd, with Salem recording high temperatures both days of 90 degrees. No smoke impacts were recorded on September 2 from 49 acres of prep burning. The 3rd was another rare day with good ventilation conditions for burning as cooler air came rushing into western Oregon, providing for 1,371 acres of open burning and no smoke impacts. Cooler-than-normal weather prevailed for the next week with about one-quarter of an inch of rain wetting fields on the 7th and 8th. After a couple of "drying days," 250 acres of open burning resulted in no smoke impacts on the 10th. Prep burning of 62 acres yielded no smoke impacts on the 13th. Combined prep and open burning on the 14th with 401 acres, and on the 15th with 689 acres also resulted in no smoke impacts.

A soaking weather system dumped over one inch of rain across the Willamette Valley from late on September 15 through the 19th. Two “drying days,” and fair ventilation conditions allowed for no smoke impacts associated with the open field burning on the 22nd of 634 acres. During the rest of September, no smoke impacts were recorded. The burning that was completed towards the end of the month began on the 24th with 9 acres, and then on the 25th there were 730 acres burned. On the 27th and 28th a total of 44 acres were open burned without impacts.

OCTOBER

October began dry with a marine push chilling high temperatures down from the mid 80s into the upper 60s. Remaining fields totaling 368 acres were burned on the afternoon of the 1st.

Unfortunately, the cool marine air had already penetrated the valley making the smoke settle quickly, resulting in 2 hours of moderate impact and 1 hour of light impact in Salem. Smoke cleared from Salem that evening, but drifted to the east overnight with 8 hours of light smoke impact in Lyons, and 6 hours of light impact in Silverton. Nephelometer readings returned to baseline levels the following morning.

Dry weather continued through the first week with another 5 acres of open burning conducted without impact on the 7th. More than an inch of rain fell from the 8th through the 10th. The remaining two fields, 26 total acres, required fluffing and then were dry enough to be burned on the 14th without smoke impacts.

Figure 1
2010 Burn Season Temperatures

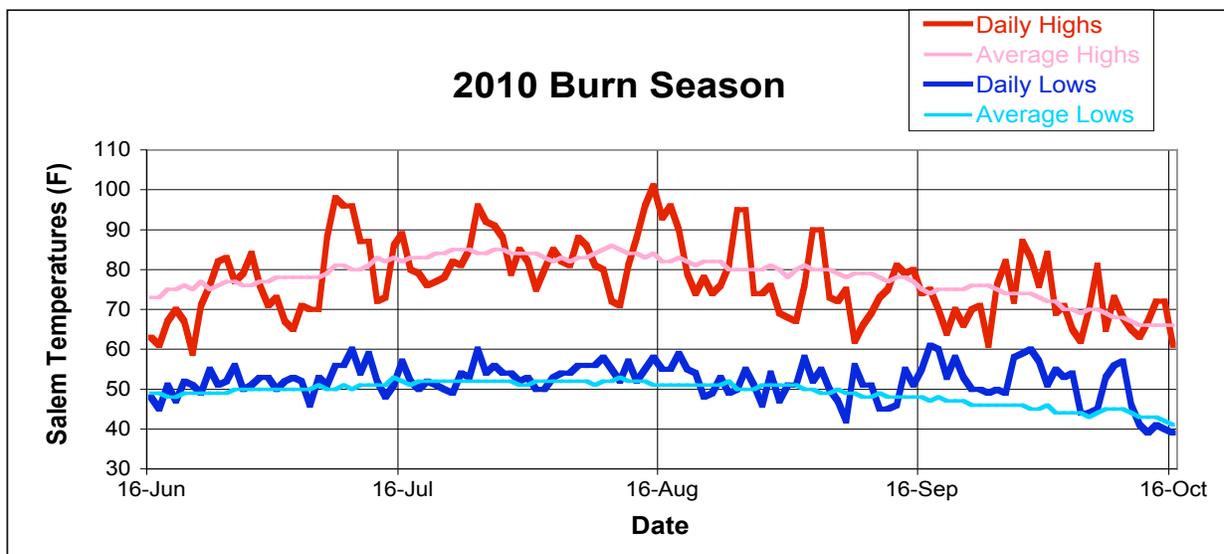
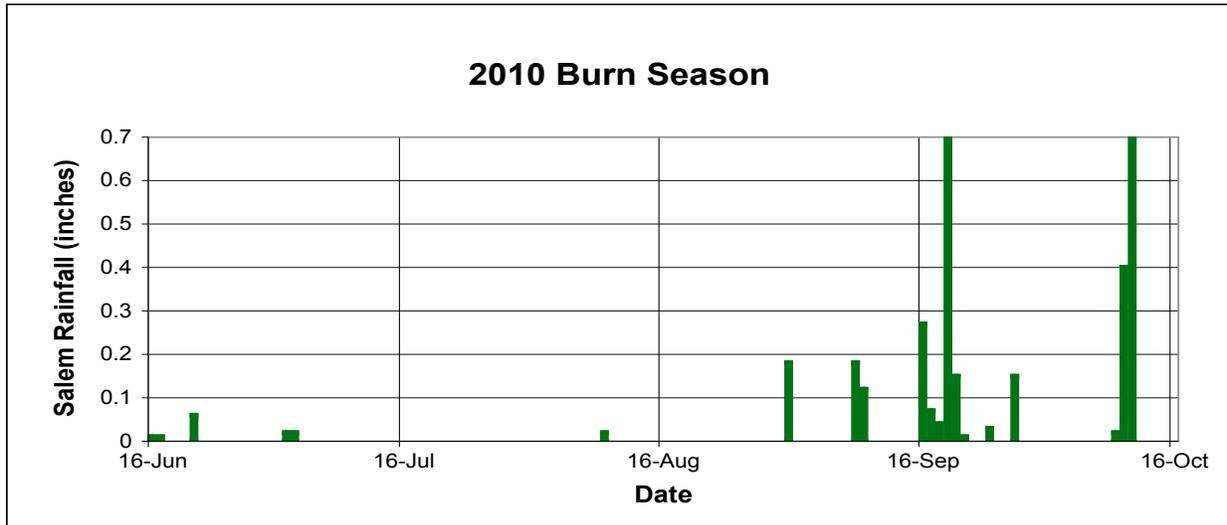


Figure 2
2010 Burn Season Precipitation



3. Registered and Burned Acres

Open field burning and propane flaming acreage pre-registration begins March 1 and continues through April 1. Figure 3 below shows the breakdown of acres registered, the statutory limitation of each type, and the final allocation of each type as imposed by the statutory limitation. Figures only show “on-time” registered acres. Totals can fluctuate after “late-registration” is completed.

Figure 3
2010 Acres Registered and Burned

Type	Limitation (Maximum burnable acres)	Acres Registered (As of April 2, 2010)	Allocation	2010 Acres Burned
Identified Species & Steep Terrain	15,000	18,490	80%	12,969
Propane Flaming	500	458	100%	111
TOTAL ACRES BURNED				13,080

Definitions

Type: Open Field Burning

- **Identified Species:** Research has identified some species of grass seed that cannot be profitably produced without thermal sanitation. These identified species are Chewings Fescue, Creeping Red Fescue, and Highland Bentgrass.
- **Steep Terrain:** Fields located in the Willamette Valley where grass seed or cereal grain is grown, but because of the steepness of the terrain, it is extremely difficult to apply alternatives to open field burning.

Type: Propane Flaming

- The process of sanitizing (burning) fields planted in regular or identified species with a propane flamer; a mobile, fire-producing, sanitation device.

4. Enforcement

The 2010 field burning season marked the fourteenth year that ODA has performed the enforcement function of the Smoke Management Program as stipulated under a Memorandum of Understanding with the Oregon Department of Environmental Quality, pursuant to Oregon Revised Statutes 468A.585.

There were three enforcement contacts during the 2010 Field-burning season. Two resulted in Notices of Non-compliance, and one resulted in a Civil Penalty Assessment.

5. Smoke Impacts

It is the goal of the ODA Smoke Management Program, with the cooperation of the Willamette Valley grass seed and cereal grain growers, to reduce and/or eliminate smoke impacts in all populated areas. The combination of accurate weather prediction for field burning, ODA field personnel observations, and grower experience all contribute to alleviate smoke impacts; however, smoke impacts still occur. Unexpected wind shifts, changes in mixing heights, transport wind speed and direction changes, and inefficient lighting techniques all can contribute to the occurrence of impacts.

The number of hours recorded for smoke impacts in cities monitored for smoke intrusions in 2010, are outlined below in Figure 4.

**Figure 4
2010 Open Field Burning Impact***

Date	Acres Burned	Impact Hours			Location
		Heavy	Moderate	Light	
July 30	255			1	Lyons
August 2	1,406	2	1	2	Lyons
August 5	817		1	2	Lyons
August 9	79			1	Lyons
August 18	1,621		2	3	Lyons
August 19	Carry-over from 8/18		2	2	Lyons
August 19	57		1		Lyons
August 27	126		1	1	Sweet Home
October 1	368			4	Lyons
October 1	368			4	Silverton
October 1	368		2	1	Salem
October 2	Carry-over from 10/1			4	Lyons
October 2	Carry-over from 10/1			2	Silverton

6. Complaints

Open field burning complaints received from Willamette Valley residents by the Smoke Management Program totaled 114 for the 2010 field-burning season. Figure 5 below identifies the number of field burning complaints originating from individual cities for the 2010 season.

Figure 5
2010 Open Field Burning Complaints by City

Albany	0	Salem/Keizer	2
Detroit	0	Scio	1
Eugene/Springfield	0	Silverton	27
Idanha	1	Stayton	17
Lebanon	1	Sublimity	3
Lyons/Mehama	38	Unknown	2
Mill City/Gates	8	Other	13
Portland Metro	0	Total	114

* As defined in Oregon Administrative Rule (OAR) 603-077-0105, cumulative hours of smoke impact result in hourly nephelometer measurements that exceed 1.8×10^{-4} b-scat above the average prior 3-hour background levels. For the purposes of this report, “heavy” hours of smoke impact are 5.0×10^{-4} b-scat or more above background (equivalent to visual range of 5 miles or less); “moderate” hours of smoke impact are 1.8×10^{-4} to 5.0×10^{-4} b-scat above background (equivalent to visual range of 12 miles or less); and “light” hours of smoke impact are 1.0×10^{-4} to 1.8×10^{-4} b-scat above the background. “Light” hours of smoke impact were not recorded before the 1999 season. The terms “light,” “moderate,” and “heavy” as used in relation to smoke impacts, are not defined in OAR, but are used by ODA to quantify the level of smoke impact on residents of the Willamette Valley. Nephelometers are located in Carus, Corvallis, Eugene, Lyons, Portland, Salem, Silverton, Springfield, and Sweet Home.