



Colorado Division of Fire Prevention and Control

Agricultural and Prescribed Fire Escapes

This Topical Fire Research Report is in response to a legislative inquiry concerning the number of wildfires that are started each year in Colorado from the escape of agricultural and prescribed fires. For the purpose of this report, the term 'escape' is used to describe an agricultural controlled burn or a prescribed fire that spread beyond the control lines and became a 'hostile' fire.

Wildland, Agricultural and Prescribed Fires, by Incident Type

In the 'typical' year between 2007 and 2011, there are 5,134 reported outside fires involving vegetative fuels in Colorado (not including prescribed fires).

Table 1
Wildland, Agricultural and Prescribed Fires, by Incident Type
 2007 – 2012 (through July 31, 2012)

Outside Vegetative Fires by Incident Type	2007	2008	2009	2010	2011	2012	Grand Total
Authorized controlled burning	912	1,137	1,121	997	1,111	317	5,595
Brush, or brush and grass mixture fire	1,218	1,885	1,339	1,636	1,707	438	8,223
Cultivated grain or crop fire	84	91	73	82	46	5	381
Cultivated orchard or vineyard fire	0	1	0	1	0	1	3
Forest, woods or wildland fire	614	563	520	451	555	114	2,817
Grass fire	1,070	1,758	1,104	1,355	1,315	326	6,928
Natural vegetation fire, other	555	873	514	543	441	116	3,042
Prescribed fire	82	112	80	72	51	14	411
Grand Total	4,535	6,420	4,751	5,137	5,226	1,331	27,400

In the 'typical' year between 2007 and 2011, there were 79 reported prescribed fires in Colorado.

Total Acres Burned

In the 'typical' year between 2007 and 2011, the reported outside fires involving vegetative fuels in Colorado (including prescribed fires) burn an average of 4,021 acres. The total acres burned by the wildland, agricultural and prescribed fires reported in Table 1 are reflected in the following table:

**Table 2
Total Acres Burned
2007 – 2012 (through July 31, 2012)**

Year	Acres Burned
2007	3,373
2008	4,951
2009	3,583
2010	4,068
2011	4,129
2012	1,024
Total Acres Burned	21,128

Fires Spread Beyond Control Line

Since 2007, there have been a reported total of 1,592 fires that have spread beyond the control lines, including 753 that were identified as agriculture or land management burns. This represents 2.8% of all wildland, agricultural and prescribed fires reported.

**Table 3
Fires Spread Beyond Control Line (Number)
2007 – 2012 (through July 31, 2012)**

Factors Contributing (Number)	2007	2008	2009	2010	2011	2012	Grand Total
Agriculture or land management burns	44	173	201	127	140	68	753
Exposure fire	0	7	1	3	5	0	16
Fire spread or control, other	20	46	42	44	34	13	199
Outside/open fire for debris or waste disposal	28	85	60	63	53	14	303
Outside/open fire for warming or cooking	10	21	18	19	17	6	91
Rekindle	20	60	40	49	38	23	230
Grand Total	122	392	362	305	287	124	1,592

The 753 fires that were identified as agriculture or land management burns, burned a total of 5,100 acres.

Table 4
Fires Spread Beyond Control Line (Acres Burned)
2007 – 2012 (through July 31, 2012)

Factors Contributing (Acres Burned)	2007	2008	2009	2010	2011	2012	Grand Total
Agriculture or land management burns	24	1,899	1,723	591	346	527	5,110
Exposure fire	0	12	1	0	30	0	43
Fire spread or control, other	102	600	92	1,709	147	74	2,724
Outside/open fire for debris or waste disposal	15	760	77	399	625	9	1,885
Outside/open fire for warming or cooking	1	7	38	1	21	0	68
Rekindle	8	21	219	19	207	14	488
Grand Total	150	3,299	2,150	2,719	1,376	624	10,318

Comparison to the Federal Experience

It is estimated that federal land management agencies complete between 4,000 and 5,000 prescribed fires annually. Approximately ninety nine percent of those burns were 'successful' (in that they did not report escapes). However, that leaves 40 to 50 escapes annually.¹

During the past few years, the USDA Forest Service's prescribed fire program has demonstrated a record of success and improvement. Analyses completed in 2002 and 2006 demonstrated a high rate of success and an improving trend.²

Table 5
USDA Forest Service Prescribed Fire Escapes and Success Rates

	1996-2001	2003-2005
Prescribed Fires	24,133	10,920
Annual Average	4,022	3,640
Acres Burned	6,406,217	4,928,766
Annual Average	1,067,703	1,642,922
Escapes	235	38
Annual Average	39.2	12.7
Average Success Rate	99.0%	99.7%

Definitions

Authorized controlled burning – Includes fires that are agricultural in nature and managed by the property owner with any required authorization. Excludes unauthorized controlled burning and prescribed fires.

Brush or brush-and-grass mixture fire – Includes ground fuels lying on or immediately above the ground such as duff, roots, dead leaves, fine dead wood, and downed logs.

¹ Escape Prescribed Fire Reviews and Near Miss Incidents, Wildland Fire Lessons Learned Center, June 29, 2005.

² Learning From Escaped Prescribed Fires – Lessons for High Reliability, Fire Management Today, Volume 66 • No. 4 • Fall 2006

Forest, woods, or wildland fire – Includes fires involving vegetative fuels, other than prescribed fire, that occur in an area in which development is essentially nonexistent, except for roads, railroads, power lines, and the like. Also includes forests managed for lumber production and fires involving elevated fuels such as tree branches and crowns. Excludes areas in cultivation for agricultural purposes such as tree farms or crops.

Grass fire – Includes fire confined to area characterized by grass ground cover, with little or no involvement of other ground fuels.

Prescribed fire – Includes fires ignited by management actions to meet specific objectives and have a written, approved prescribed fire plan prior to ignition. Excludes authorized controlled burning.

Unauthorized burning – Includes fires that are under control and not endangering property but without the required authorization.