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COMPARISON OF 1949 SUMMER FOREST FUEL MOISTURE IN OREGON AND WASHINGTON WITH OTHER YEARS

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There is much speculation about the comparative severity of the 1949 fire season. Forest fire protection agencies and sponsors of fire prevention campaigns wonder if the large or small acreage burned during the season is a valid measure of the success or failure of their efforts, or whether the burning conditions as influenced by weather were wholly responsible for any apparent change in the fire record from previous years. Fortunately, fuel moisture content measurements are a useful indicator of burning conditions.

Very wet forest fuels will neither ignite nor carry fire; conversely, very dry fuels will readily ignite and burn. Therefore, under any given conditions moisture content of the forest fuels may be used as a measure of ease of ignition as well as an indicator of the rate of burning (or spread) after ignition.

Moisture content of the finer forest fuels, those which ignite first and carry the fire, is closely approximated by the moisture content of the carefully calibrated fuel moisture indicator sticks that are exposed to the weather at many fire danger observation stations in Oregon and Washington.

Moisture content of these fuel moisture sticks and the light forest fuels changes with rain, dew, relative humidity, and direct sunshine. Since fuels do not gain or lose moisture instantly, the moisture content at any time depends on the duration and degree of each weather factor.

The fuel moisture sticks are weighed on special scales calibrated to read directly in percent of moisture content by weight.^{1/}

In actual practice the moisture content of these sticks is observed three times each day during the fire season. The lowest of these three readings approximates the worst burning conditions of each day.

An average of the daily minimum fuel stick moisture values for any period indicates the burning conditions for the period. By the use of average fuel moisture values, the severity of weather and burning conditions of one season may be compared with those of any other season at the same station.

To make such comparisons between fire seasons, the average daily minimum fuel moisture for the period July 16 to August 31 inclusive, the principal part of the fire season, has been computed for 62 representative fire danger stations in the national forests of Oregon and Washington. This year's averages for the individual stations and the combined averages for various portions of the two states have been compared with similar averages for previous years commencing with 1941.

The Blue Mountain area and the Deschutes-Fremont area east of the Cascades both experienced in 1949 the second driest year since these summaries began in 1941. Although 1945 was the driest year for those areas in general, at 3 of the 12 reporting stations 1949 was the driest year and at 4 other stations it was the second driest to 1945. The north-eastern extremity of the Blue Mountain area had more nearly average summer fuel moisture in 1949.

Although much of the Rogue-Siskiyou area of southwestern Oregon had no precipitation during the 1949 period studied, average minimum fuel moisture values were not unusually low. Values were higher than in 1946 though lower than the 1947 and 1948 averages. Driest years in that area were 1945 for peak stations and 1944 at lower elevations.

It was very dry in the southern Cascades where two low level stations and one high level station, all on the Umpqua National Forest, reported their lowest average minimum fuel moistures for the period of record. With the exception of the Mt. Hood area, the remainder of the Oregon Cascades experienced near average fuel moisture conditions at both high and low levels with values generally less than in 1947 but greater than in 1946. Two reporting stations in the Mt. Hood area had the highest average fuel moisture values thus far.

Along the Oregon coast Siuslaw area high level stations reported values lower than in the past two years but higher than in 1946. The 1949 season was about average in the higher Coast Range, being the fourth dampest season of the 9-year period. At low elevation stations in the same area values varied from equal to the driest year at Powers and next to the driest at Mapleton to third wettest at Hebo.

^{1/} Morris, William G. Gaging fire weather in the woods. West Coast Lumberman 68 (6): 20. June 1942.

In the Olympics and the western Washington Cascades fuel moistures averaged higher than in any other year except 1948. In the Wenatchee-Chelan area of the northeast Washington Cascades only 1941 and 1948 had higher fuel moistures than 1949.

Summary

Severity of the 1949 fire season in Oregon and Washington measured by fuel moisture cannot be described in just a few words as there was considerable variation between areas. A number of stations experienced the driest conditions since these comparisons were started, while two stations on the Mt. Hood came up with the highest seasonal average fuel moistures to date. It can be said, however, that with the exception of portions of the Mt. Hood area, this past summer, during the period July 16 to August 31, was drier throughout the region than the corresponding period in 1948. It may also be stated that fuel moisture values were generally low in Oregon and generally high in Washington as compared with the previous 8 years.