

# Hidden Fire Losses

uncontrolled fires costly to soils,  
plant cover, water and timber supplies

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**Long time studies** indicate that uncontrolled brush and forest fires profoundly affect soils, plant cover and water, as well as destroying man made structures and interfering with management plans for farms, forests and industries.

Fire damage for the United States in 1947 reached the total of seven hundred million dollars. The tragic consequences of these fires, most of which are the result of careless human actions, are often more far reaching than can be assessed in present dollar and cent valuation. The hidden losses constitute further reasons for the exercise of care in the use of fire.

When walking through a burned forest or brush field after a hot fire, it is not uncommon to sink ankle deep into soft, fluffy ashes. These are the remains of the important humus layer of decaying vegetable material in which myriads of small forms of life had been working to maintain soil fertility. Fire destroys this teeming life and wind and rainfall often carry away the light residue leaving a hard and baked soil surface. Humus is one of the primary requirements of most California soils and its destruction by fire may require many years for replacement.

Most progressive grain farmers recognize the need for humus in the soil and now disk in the residue after harvesting rather than burn the stubble, which was common practice a few years ago. This stubble mulching of level or gently sloping grain fields is in recognition of the fact that even well controlled fires destroy badly needed vegetable material and unnecessarily deplete soil fertility.

## Erosion

On slopes where fire has burned the protective humus layer, there is an even more far reaching effect in the loss of soil by accelerated erosion during heavy rains.

Studies have shown that the vegetable layer or humus under forest and brush cover is most important in keeping the soil in a porous condition for the reception of rainfall and checking rapid runoff which results in the washing away of fertile top soil. Loss of this top soil depletes the productive capacity of the site and results in progressively poorer plant cover.

In the case of what had been a tall and

beautiful forest of high commercial value, the result may be a dense brush field of valueless chaparral species which for many years may occupy the land so completely as to prevent reforestation by the former desirable trees.

On grazing lands fire also destroys the seeds of the most valuable forage plants, but stimulates seed germination of many unpalatable species. Here erosion of top soil may make it impossible for grasses or herbs of good quality for livestock to come back in the progressively more dry and sterile soil, which eventually may acquire an erosion pavement of coarse gravelly particles.

With decreased percolation of water into the soil because of lowered absorptive capacity and rapid run-off, underground water supplies fail of replenishment, springs dry up earlier in the spring and streams have shorter periods of flow. Thus one hidden effect of fire is to decrease water supplies.

## Timber

Even very light surface fires through stands of large, mature forest trees often cause material losses of merchantable timber. This will be seen at the bases of large trees which will be found to have scars known as *cat-faces* in the pine country and *goose-pens* in the redwood region.

Detailed examination of such scars shows them to be the result of repeated fires which have gradually eaten into the wood of these trees until the butt log is often completely unmerchantable though the tree is still alive.

In the case of giant redwoods such fire cavities or *goose-pens* may be six to 10 feet across at the bottom and extend up into the tree 20 to 40 or more feet. In a few cases fires in such cavities have smoldered for weeks and months, finally breaking out near the top of the tree and destroying all of its volume except a narrow cylinder of living sapwood. The result is known as a *chimney tree* and is valueless except as a natural curiosity.

Pines attempt to heal such fire scars by covering the damaged wood with a coating of pitch. This serves the purpose well, but is so flammable that later fires burn even more fiercely and enlarge the scar to considerable size.

Wood rotting fungi may then gain en-

trance and cause additional losses by making wood adjacent to the scar soft and *punky* with fungus mycelium.

Douglas fir, white fir and red fir are particularly vulnerable to such fungus attack after being scarred by fire and though they may live for years in the forest, they have no commercial value as the wood is too far gone with such *dote* or heart-rot. If such *doty* logs are sawed into lumber and built into a house or other structure, the heart-rot may spread where moisture conditions are high enough and eventually require expensive replacement with sound timbers. Such hidden losses with fire in the forests may not appear for many years and the exasperated owner of the structure rarely traces his trouble to a forest fire.

## Further Losses

Where heavy, mature forest stands are wiped out over considerable areas by fire, the hidden losses must include the expense of removing the debris and replanting with seedlings of value for timber purposes. Otherwise it may be many years or decades of virtual nonuse of such lands until reforestation takes place through the uncertain and prolonged process of natural reseeding.

In many such areas it is necessary to include losses due to the depletion of game, fish and birds by such fires. The ruining of formerly scenic and recreational opportunities may be of high economic significance to adjacent rural or mountain communities. Burned forests attract few tourists and pay a minimum of taxes towards the maintenance of schools, roads and other necessities.

Under present economic conditions it

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Stand of Jeffrey Pine killed by fire.  
Note soil denuded of plant cover.

