A Science Service Feature

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? WHY THE WEATHER ? Mailed November 22,1932

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## HEATING THE CITRUS GROVES

Nowhere else in the world is orchard-heating conducted on so vast a scale as in the citrus groves of southern California, where a total area of some 70,000 acres is protected from occasional frosts by nearly 3,300,000 heaters, of which about 2,900,000 use oil as fuel. One filling of the oil-burning heaters in this region takes the contents of 2,500 railway tank cars, and if weather conditions should require general heating in all districts -- something that hitherto has never happened -- as much as 15,000,000 gallons of oil might be burned during a single night. About 50 heaters per acre are required to ensure complete protection, and the oil consumption amounts on an average to between 15 and 20 gallons per acre per hour. The cost of heating, at present prices of fuel and labor, varies from $0.75 to $1.00 per acre per hour, exclusive of interest and depreciation of equipment.

At present the citrus industry is struggling with the problem of diminishing the smoke nuisance involved in the process of heating. Formerly the smoke itself was supposed to afford valuable protection from frost, through its effect in checking loss of heat by radiation, but experiments conducted more than a decade ago proved this idea to be a fallacy. The freeze of 1922 brought the first realization of the seriousness of the smoke problem, and since that time there has been great improvement in the design of heaters with a view to minimizing their output of smoke.



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