Effects of Three Mosquito Larviciding Oils on Production of Salt Marsh *Spartina* Grasses[1]

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Oiling of salt marsh pools for mosquito control has been practiced for over 50 years. Certain oil formulations undoubtedly caused damage to the salt marsh flora (DELANEY, 1921). BAKER (1971) found little long term vegetative damage to most salt marsh perennial floras after spraying with Kuwait crude oil. DEONG , et al., (1972) found that damage to citrus foliage corresponded to the amount of sulfonatable oil present in petroleum oils used as insecticides.

During the summer of 1972, mosquito larviciding oils currently in use by some mosquito control districts were assessed for their effects on two salt marsh grasses on marshes of the Mullica River near Atlantic City, N.J. Each of three 4m x 8m plots of Spartina patens (Ait.) Muhl. and S. alterniflora Loisel. were hand sprayed with a different larviciding oil formulation at rates normally used for mosquito control. A fourth plot was used as a control (Table 1). Applications of each formulation were made on May 11 and 30, June 9, July 5 and 20, and August 3.

TABLE 1

Plot No.	Formulation	Rate of Application
1.	No. 2 Fuel Oil + 0.25% Triton x-100 R	20 gallons per acre
2.	Control	
3.	Flit MLO R	5 gallons per acre
4.	No. 2 Fuel Oil + 0.375% Triton x-207 R + 0.25% 30 W Motor Oil	5 gallons per acre

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Standing crop data of the two species were taken on June 7 and 27, July 19, August 10 and 29, and October 15. On each sampling date four, ½ x ½m^2 quadrats in each plot were clipped at the surface, separated into living and dead components, and dried for 48 hours at 80°C before weighing.

In the S. patens plots, a significant difference in dry weight of samples taken August 10 and 29, and October 15 was found between plot #1 (sprayed with #2 Fuel Oil and Triton x-100 R) and plot #2 (the control) but not between plot #2 and either of the other plots.

Figure 1 illustrates the standing crop of S. patens for plot numbers 1 and 2 at the various sampling times with one standard deviation indicated. Supporting these differences are field observations showing more yellowing of plants in plot #1 as early as June 15, which continued throughout the study period. Also fewer individuals flowered in plot #1 compared to the control plot.

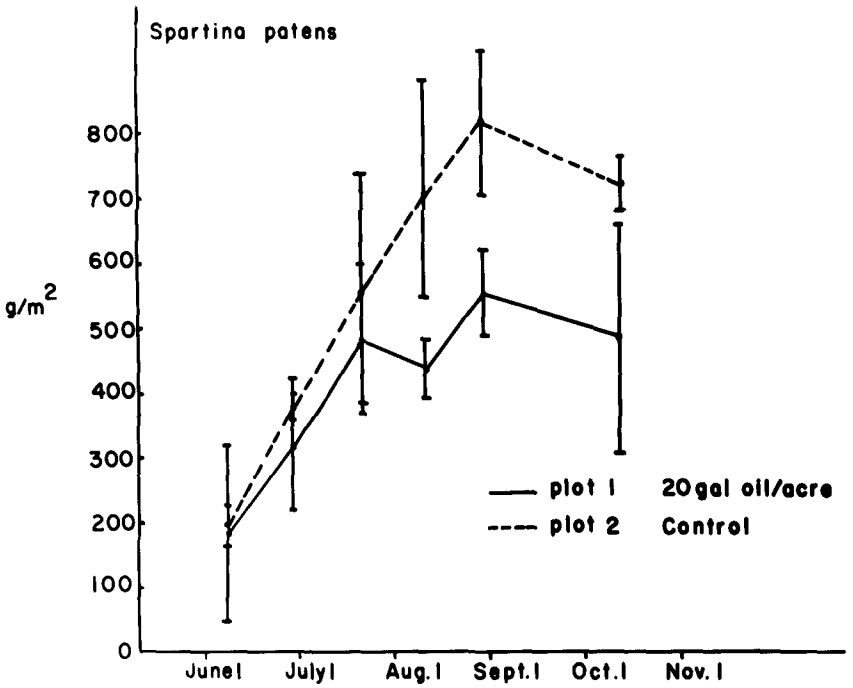

Figure 1. Standing crop of Spartina patens in g/m^2 for plots # 1 and 2 throughout the 1972 growing season. One standard deviation is indicated.

No significant difference in dry weight was found between the control plot and any of the test plots when oils were applied to S. alterniflora. Observations did show that applications of #2 Fuel Oil and Triton x-100 R at 20 gallons per acre on plot #1 caused more leaf yellowing than other treatments.

Larviciding oils may reduce production of at least S. patens following multiple applications. It appears that the rate of application is the most significant factor in affecting these marsh grasses though the spreading agent may play a significant role as well.

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