

TERMITE SOIL POISON TESTS - GAINESVILLE, FLORIDA

- Ira Hatfield -
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This report covers the establishment at the Austin Cary Memorial Demonstration Forest at Gainesville, Florida, of a test plot to determine the termite repellent value of Monsanto Chemicals used as soil poisons. This test was established in cooperation with the School of Forestry, University of Florida, Gainesville, Florida.

A suitable site was chosen on the property of the above mentioned demonstration forest where the test could be protected from fire and vandalism. The chosen area was laid out in 36 rows, the distance between each row being five feet. Round holes 15" in diameter and 16" deep were dug in each row, and the holes in alternate rows were staggered. The distance from center to center of the holes in each row was five feet, three inches. After treatment with chemical the dirt was replaced in the holes according to the procedure given below. A picture of the plot and a plot map showing the location of each treatment is attached to this report.

The installation work started on September 21, and extended through October 12, 1938. The 540 holes used for the test were dug as rapidly as possible in order to utilize the available labor, and the treatments were then applied as expeditiously as possible. In order to give a picture of the way the treatments were made, the procedure is outlined below:

1. A hole 15" in diameter and 16" deep was dug, keeping the measurements as accurate as possible. Since it was impossible to treat the holes as rapidly as they were dug, rain washing occurred and it was necessary in some cases to ream out the holes before treatment. The soil classification for the area is given as sandy. Diffusion of water from the holes after rains was generally rapid.
2. Untreated Southern yellow pine 2 x 4's - 18" long were tagged with aluminum tags for identification purposes. Ten such blocks were used for each treatment, hence ten blocks bore the same number, but identifying letters from A to J inclusive as 1-A,

1) The writer wishes to acknowledge the cooperation rendered by members of the School of Forestry staff or others at the University of Florida.

1-B, 1-C, etc. to 1-J; 2-A, 2-B to 2-J, etc. Forty blocks were labeled CK-1, etc. to CK-40, to serve as checks or controls.

3. A measured quantity of chemical was applied at each hole; ten holes in each case receiving exactly the same quantity and kind of chemical. Applications were made as follows:
 - a. The walls and floor of eight of the ten holes for each of the liquid treatments was sprayed with the liquid, and dirt replaced slowly so that it could be sprayed with the chemical as the dirt was returned to the hole. A regular fly sprayer was used for the application of small quantities of liquid chemical; one pint or 1 quart quantities of liquid were applied from a bottle equipped with a clothes sprinkler top, and a regular garden sprinkling can was used to apply treatments of 1/2 gallon or more of liquid.
 - b. The dirt thus sprayed was returned until seven inches of packed dirt had been replaced in the hole. The surface of the dirt in the hole was again sprayed, and an untreated 2 x 4 bearing the proper tag was placed in an upright position in the hole. Dirt with spray applications was placed around the 2 x 4 until the hole was filled. Just before the final inch of dirt was added, any remaining chemical in the sprayer was sprinkled on the ground around the wood. Further dirt was added and tramped down so that the ground level was the same around the wood as in the surrounding plot area.
 - c. In the case of two 2 x 4's out of each series of ten (those bearing letters I and J), untreated dirt was replaced for 7 inches, then the 2 x 4 was set in place, and more untreated dirt added until when tramped down four additional inches of dirt had been replaced. Then the requisite quantity of chemical was "trenched" around the stick, and the remaining 5 inches of dirt replaced in the hole.
 - d. Where crystalline materials were used without solvents, all ten sticks were treated as in (c) above, trenching the chemical around the 2 x 4 five inches below the final ground surface.
4. For treatments 48, 49 and 50, two coats of the material under test were brushed on the 2 x 4's, and they were set as above without treating the dirt placed around them.
5. The 40 check or control 2 x 4's were set in place without chemically treating the dirt placed around them.

The chemical treatments and information relative to them and their use in the installation are listed in Table I.

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The following weather data for the period of the installation are given as they may have some bearing upon the final results obtained. The precipitation during the installation occurred on September 27, (drizzled all day); Sept. 28 (drizzled in A.M., torrential rain in P.M.); and Sept. 29 (rained in P.M.). The water table was close to the bottom of the holes during the installation period.

It is proposed that this test area be examined annually and that records be made such time relative to the individual conditions of each wood specimen. Each specimen will be replaced in its proper test place as soon as the inspection is finished.

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TABLE I

Information on Chemical Treatments Used in Gainesville, Florida
Soil Poison Tests against Termites

Treatment Number	Chemical Under Observation	Lot Number or Source of Chemical	Concentration and Formulation of chemical used in each test hole	Notes of possible value in interpreting results
1-A through 1-J	Pentachlorophenol	L-58	1/2 gal. as Permatol A Treating Solution	Holes 1-E and 1-F full of palmetto roots Hole 1-E poorly treated at top.
2-A through 2-J	"	L-58	1/4 gal. "	
3-A through 3-J	"	L-58	1/8 gal. "	
4-A through 4-J	C-40	38-3-9	8 oz. C-40 in 4 oz. kerosene	-
5-A through 5-J	D-P high boiler 5442		8 oz. chemical, 8oz. kerosene	-
6-A through 6-J	Pentachlorophenol		2 1/2% pentachlorophenol in Shell #2 fuel oil. 1/8 gallon per hole except as noted	6-F short a little liquid in treatment
7-A through 7-J	Santobrite		8 oz. dissolved in 1/2 gallon water	
8-A through 8-J	"		4 oz. dissolved in 1/2 gallon water	
9-A through 9-J	"		2 oz. dissolved in 1/2 gallon water.	

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Treatment Number	Chemical Under Observation	Lot Number or Source of Chemical	Concentration and formulation of chemical used in each test hole	Notes of possible value in interpreting results
10-A through 10-J	Orthodichlorobenzene	L-29	16 oz.	
11-A through 11-J	Orthodichlorobenzene	L-29	8 oz.	
12-A through 12-J	"	L-29	6 oz.	
13-A through 13-J	Kerosene or Shell #2 Fuel Oil		1/8 gal. kerosene/hole 1/4 gal. Shell #2/hole	13A,B,C,D,I-Kerosene 13E,F,G,H,J-Shell #2 fuel oil
14-A through 14-J	Paradichlorobenzene	L-160	16 oz.	
15-A through 15-J	Paradichlorobenzene	L-160	12 oz.	
16-A through 16-J	Paradichlorobenzene	L-160	8 oz.	
17-A through 17-J	Paradichlorobenzene	L-160	6 oz.	
18-A through 18-J	Aroclor 1242	L-1	8 oz. chemical in 4 oz. kerosene	
19-A through 19-J	Aroclor 1242	L-1	4 oz. chemical in 4 oz. kerosene	
20-A through 20-J	Aroclor 1243	L-2	8 oz. chemical in 4 oz. kerosene	
21-A through 21-J	Aroclor 1243	L-2	4 oz. chemical in 4 oz. kerosene	
22-A through 22-J	Aroclor 1254	L-15	8 oz. chemical in 4 oz. kerosene	

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Treatment Number	Chemical under Observation	Lot Number or Source of Chemical	Concentration and formulation of chemical used in each test hole	Notes of possible value in interpreting results
23-A through 23-J	Aroclor 1254	L-15	4 oz. chemical in 4 oz. kerosene	
24-A through 24-J	Aroclor 1242 Pentachlorophenol		4 oz. Aroclor 1242 1/2 oz. pentachlorophenol 3 1/2 oz. kerosene	
25-A through 25-J	Aroclor 1243 Pentachlorophenol		4 oz. Aroclor 1243 1/2 oz. pentachlorophenol 3 1/2 oz. kerosene	
26-A through 26-J	Trichlorobenzene	L-1	8 oz.	
27-A through 27-J	"	L-1	4 oz.	
28-A through 28-J	"	L-1	2 oz.	
29-A through 29-J	Tetrachlorobenzene		8 oz. crystals	All trenched
30-A through 30-J	Tetrachlorobenzene		4 oz. crystals	All trenched
31-A through 31-J	Tetrachlorobenzene		4 oz. tetrachlorobenzene in 4 oz. benzol	
32-A through 32-J	Orthodichlorobenzene	L-29	8 oz. orthene .744 oz. fish oil soap 1/2 gallon water	32-H wood at side of hole
33-A through 33-J	"	L-29	4 oz. orthene .744 oz. fish oil soap 1/2 gallon water	

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Treatment Number	Chemical under Observation	Lot Number or Source of Chemical	Concentration and formula of chemical used in each test hole	Notes of possible value in interpreting results
34-A through 34-J	Orthodichlorobenzene and Pentachlorophenol		8 oz. orthene .421 oz. penta 3.61 oz. Kearns emulsifier 48.12 oz. water	34-C wood in side of hole
35-A through 35-J	Orthodichlorobenzene and Pentachlorophenol		4 oz. orthene .421 oz. penta 3.61 oz. Kearns emulsifier 48.12 oz. water	35-B Hole badly caved in
36-A through 36-J	Orthonitrodiphenyl	L-13	8 oz. in 8 oz. benzol	
37-A through 37-J	"	L-13	4 oz. in 8 oz. benzol	
38-A through 38-J	Orthoaminodiphenyl	W-19	8 oz. in 8 oz. benzol	
39-A through 39-J	"	W-19	4 oz. in 8 oz. benzol	
40-A through 40-J	Nona- and deca-chlorodiphenyl	L-1	8 oz. in 8 oz. kerosene	All trenched
41-A through 41-J	"	L-1	4 oz. in 8 oz. kerosene	41-E) trenched as 41-H) bottle broke
42-A through 42-J	Tetrachlorotoluol		8 oz. in 8 oz. kerosene	All trenched
43-A through 43-J	"		4 oz. in 8 oz. kerosene	Heated solution in order to be able to spray it. 43-I and 43-J not heated

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Treatment Number	Chemical Under Observation	Lot Number or Source of Chemical	Concentration and Formulation of chemical used in each test hole	Notes of possible value in interpreting results
44-A through 44-J	Ortho-vanillin		8 oz. in 8 oz. benzol	
45-A through 45-J	" "		4 oz. in 8 oz. benzol	
46-A through 46-J	Chlorcosane	V-6	8 oz. in 4 oz. kerosene	
47-A through 47-J	"	V-6	Due to error of application, concentrations varied as follows: 47-B, D, E, F, G	8 oz, 8 oz. 47-C, H=100 cc formul 46 + 100 cc kerosene 47-A, I, J=6 oz. formul 46 + 64cc kerosene
48-A through 48-J	Armatol (brush)			Two brush coats 2 hrs. apart - Set after 2 hrs.
49-A through 49-J	Permatol A Treating Solution	L-57		Two brush coats - 2 hrs. apart. Set after 2 hrs. 49-A very moist when brushed
50-A through 50-J	Permatol A Treating Sol'n and Orthodichlorobenzene		Permatol A containing 15% orthene	Two brush coats 2 hrs. apart - Set after 2 hrs.

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