

Field Experiments with Silvex and Amitrol-T for Aquatic Weed Control

by

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Summary Report

Large-Scale Field Tests

Stage 5 of Research Program

Expanded Project for Aquatic Plant Control

20-24 May 1963

(Report includes 17-18 July 1963 inspections)

1. In Attendance:

Dr. Lyle W. Weldon, Research Agronomist, ARS, Fort Lauderdale, Fla.

G. Roy Elmore, Sanitary Engineer, U. S. Public Health Service, Atlanta, Ga.

Gordon S. Mobley, Jr., Corps of Engineers, Jacksonville

Charles F. Zeiger, Corps of Engineers, Jacksonville

*Wayne E. Tidsdale, Sanitary Engineer, State Board of Health, Jacksonville

*W. M. Beck, Jr., Biologist, State Board of Health, Jacksonville

*Frank Wilson, Entomologist, State Board of Health, Jacksonville

*C. T. Licky, Dow Chemical Company

*John B. O'Neil, Agriculturist, American Cyanamid Company

*Lester H. Hartwig, Amchem Products, Inc.

*John Galliger, Amchem Products, Inc.

*Bill Allen, Amchem Products, Inc.

*Part time.

2. *Purpose of tests* was to comply in part with the requirements of Step 5 of the Research Program, as described in Research Design Memorandum No. 3, revised October 1961, pertaining to field testing of selected chemicals.

3. *Selection of test areas.*—On 23-24 January 1963, representatives of participating agencies conferred in Jacksonville following a field trip covering potential test areas. The scope of the tests was determined and specific areas were selected for tests of given chemicals. However, approval was given by the Corps for ARS to complete certain experiments on Amitrole-T and Fenac prior to initiation of the field tests. ARS subsequently recommended a mixture of one-half pound of Amitrole-T with one-eighth pound of Fenac for application to hyacinths in Chitty Pond No. 1 and Darkwater Lake, and Amitrole-T alone for Chitty Pond No. 2 and Cooter Pond No. 3.

4. *Test Areas.* — a. *Areas selected, dates of application, and locations and descriptions* are as follows:

(1) *Deep Creek.* — Application was made on 21-22 May 1963. Deep Creek rises in Big Fish Tail Swamp in south-central St. Johns County, flows northerly about 12 miles, and empties into St. Johns River about 67 miles above its mouth. The main area drained by the creek and its two principal tributaries—Crocker and Sixteen Mile Creeks—comprises roughly 50 square miles. The lower 10 miles of the creek is navigable and varies in width between 10 and 200 feet, with depths of 1 to 30 feet. Water stages in the creek vary with those in St. Johns River, which are affected by a tide of about 1 foot. The test area covers the navigable part of the creek, beginning at a point about 4 miles above

the highway bridge at State Road 207, 1 mile northeast of Hastings. About 7 to 14 acres of alligatorweed were sprayed.

(2) *Cooter Pond No. 3.* — Application was made on 22 May 1963. This pond is located in Bradford County next to State Road No. 329, one-half mile southwest of the intersection of State Roads 329 and 235. The pond is fed by ground water and has an area of about 11 acres. Its average depth is about 4 feet, giving about 46 acre-feet of volume in the pond as determined by sounding. The entire 11 acres of hyacinths were sprayed.

(3) *Cooter Pond No. 2.* — Application was made on 22 May 1963. This ground-water-fed pond is located in Bradford County, three-fourth mile northeast of the intersection of State Roads 329 and 235. It has an area of about 14.5 acres with an average depth of about 4 feet, giving a volume of about 58 acre-feet. The 14.5-acre pond was covered with hyacinths and the whole area was sprayed.

(4) *Chitty Ponds Nos. 1 and 2.* — Application was made on 23 May 1963. These two ponds are located in Alachua County near the south fringe of Paynes Prairie on the Chitty Cattle Ranch east of State Road 121, about 18 miles southwest of Gainesville. Pond No. 1, with an area of 3.8 acres, was completely covered by hyacinths. Average depth of water was less than 1 foot, or 3.6 acre-feet. Pond No. 2 contained 2.1 acres of hyacinths and had a volume of about 2.5 acre-feet.

(5) *Darkwater Lake.* — Application was made on 24 May 1963. This lake is located in Putnam County, about 1 mile east of Johnson on State Road 315 and about 2 miles south of State Road 20. The lake surface of about 80 acres was covered with about 46 acres of hyacinths.

b. *Types of weeds, infestation, and condition of growth.*

(1) *Deep Creek* was infested with alligatorweed, which was heavily matted with full-bloom stands 12 to 18 inches tall (see photographs made before treatment, 30 days after treatment, and 60 days after treatment).

(2) *Cooter Pond No. 3.* — The entire surface of the pond was infested with hyacinths in full bloom and up to 2 feet tall.

(3) *Cooter Pond No. 2,* also infested with hyacinths in full bloom, was covered completely but lacked the coverage of full-grown plants that infested Pond No. 3 (see photographs).

(4) *Chitty Pond No. 1.* — The infestation of hyacinths was similar in growth and coverage to that in Cooter Pond No. 2.

(5) *Chitty Pond No. 2* was almost a duplicate of Chitty Pond No. 1 except in area.

(6) *Darkwater Lake* was infested with a 2- to 3-foot stand of hyacinths in partial bloom, heavily matted over scattered areas of the lake.

c. *Chemicals and amounts tested.* — (1) *Deep Creek.* — Silvex (PGBEE) was used at a rate of 4 to 8 pounds acid equivalent an acre, with 28 barrels of mixture required for the 7-14 acres of weeds treated.

(2) *Cooter Pond No. 3* was treated with Amitrole-T at a rate of 2.9 pounds acid equivalent an acre, requiring 22 barrels of mixture to cover the 11 acres.

(3) *Cooter Pond No. 2* was treated with 2,4-D at 1.8 pounds acid equivalent an acre, using 13 barrels of mixture for the 14.5 acres.

(4) *Chitty Pond No. 1* was treated with one-half pound of Amitrole-T and one-eighth pound Fenac, using 8 barrels of mixture for the 3.8 acres infested.

(5) *Chitty Pond No. 2* was treated with Amitrole-T at

a rate of 1.5 pounds an acre. Three barrels of mixture were used on the 2.1 acres of hyacinths.

(6) *Darkwater Lake* was treated with one-half pound of Amitrole-T and one-eighth pound Fenac. Sixty-two barrels of mixture were used on the 46 acres in packed locations over the 80-acre surface of the lake.

5. *Sampling* was accomplished for the U. S. Public Health Service by G. Roy Elmore, Senior Assistant Sanitary Engineer,, at all test areas; and for the State Board of Health by W. M. Beck, Jr., Biologist, at Cooter Ponds Nos. 2 and 3.

a. *Type and frequency.* — (1) *By U. S. Public Health Service.* — Composite samples of water and of soil were taken by Mr. Elmore at all test areas before treatment, within 4 hours following treatment, and 24 hours after treatment. A composite water sample has been taken weekly at each location by Corps personnel and shipped to U.S.P.H.S., Atlanta, Ga.

(2) *By State Board of Health.* — Mr. Beck made biological samplings before and after application at the two Cooter Ponds. On 31 May 1963, Mr. Beck and Mr. Wilson resampled those ponds biologically.

b. *Laboratory work.* — (1) *In field.* — (a) Mr. Elmore ran pH and alkalinity tests on water samples at each site.

(b) Mr. Beck typed the biological samples in the field as taken.

(2) *Other.* — Composite water samples are being taken weekly at each test site by Corps personnel and shipped to U.S.P.H.S., Atlanta, for analysis.

6. *Photographs.* — a. *Aerial photographs* (2 sheets) of all test areas are appended to this report.

b. *Photographs* taken at each test site, except Darkwater Lake, are also appended hereto. The pictures were taken before treatment and about 30 days and 60 days after treatment.

7. *Retreatment.* — Test areas were inspected 17-18 July 1963 and retreatment was scheduled as follows:

Deep Creek—During week of 22 July 1963

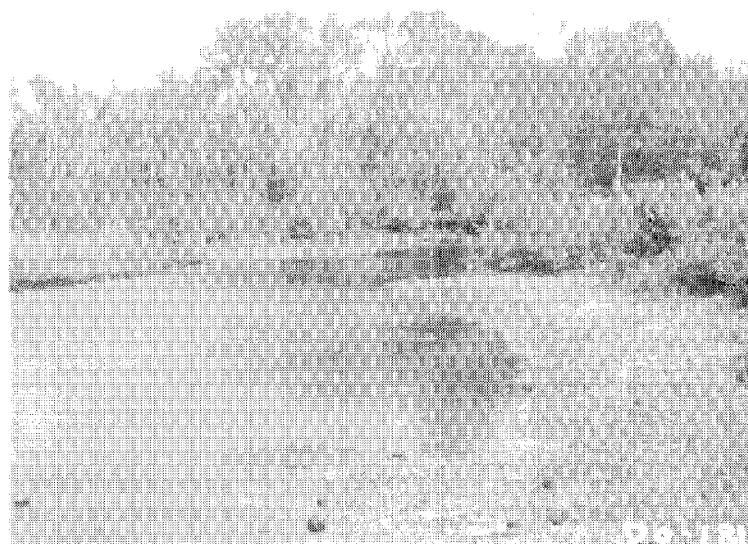
Cooter Pond No. 2—During week of 22 July 1963

Darkwater Lake—Between 12 and 26 August 1963

Chitty Pond No. 1—Between 12 and 26 August 1963

Cooter Pond No. 3—Not required at present

Chitty Pond No. 2—Not required at present

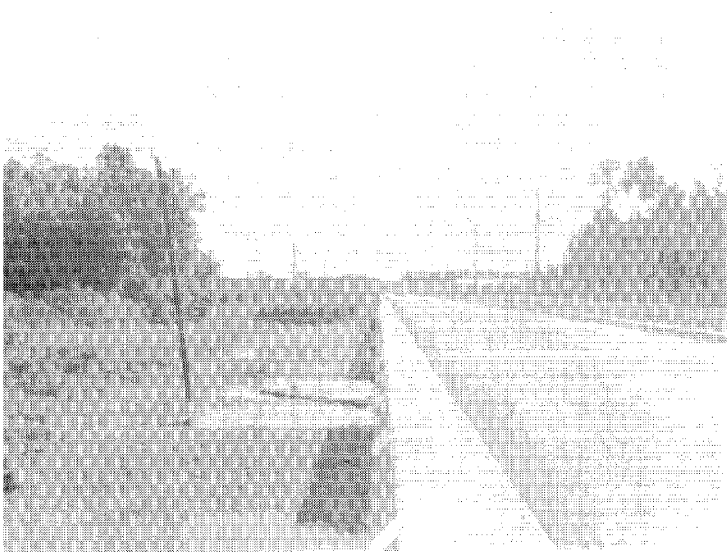


Deep Creek

21 May 1963

19 June 1963

17 July 1963



Deep Creek

21 May 1963

19 June 1963

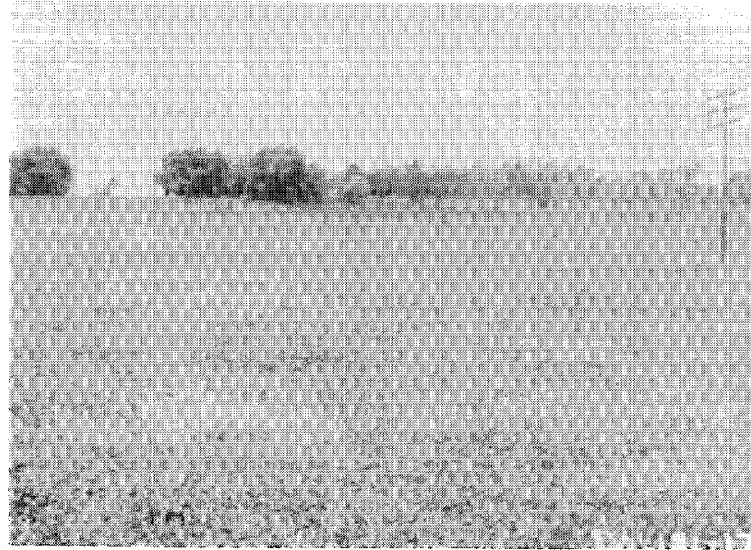
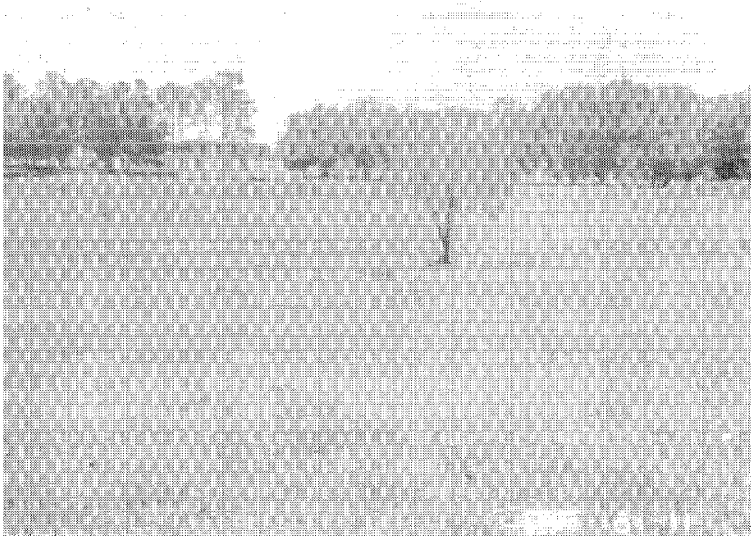
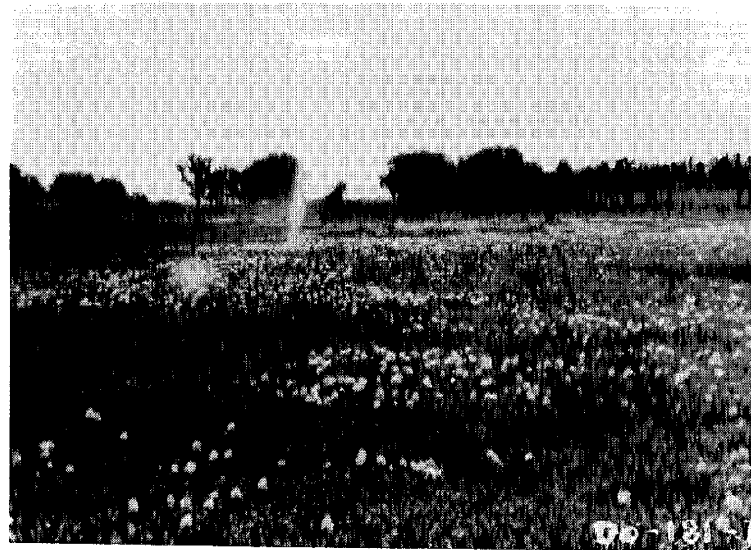
17 July 1963

Cooter Pond No. 3

22 May 1963

19 June 1963

18 July 1963



Cooter Pond No. 2

22 May 1963

19 June 1963

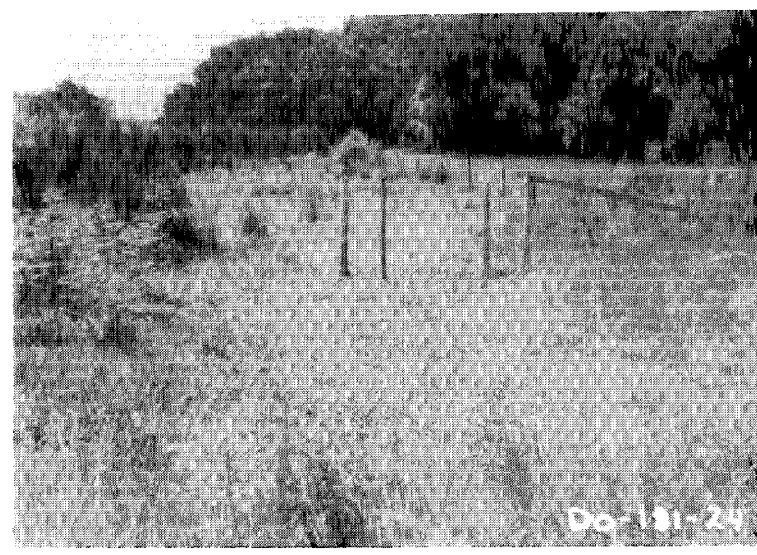
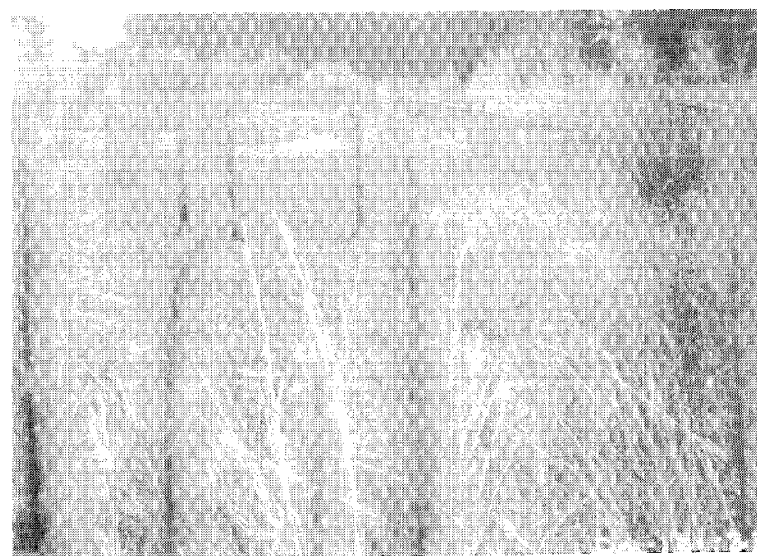
18 July 1963

Chitty Pond No. 1

23 May 1963

19 June 1963

18 July 1963



Chitty Pond No. 1

23 May 1963

19 June 1963

18 July 1963

Chitty Pond No. 2

23 May 1963

19 June 1963

18 July 1963