

# Aquatic Plant Control And The Dollar

WILLIAM E. WUNDERLICH

*Chief, Aquatic Growth Control Section (Ret.)  
U. S. Army Engineer District,  
New Orleans*

The aquatic weed problem in Louisiana has been tied to the dollar sign ever since the water hyacinth first became a nuisance. Because the water hyacinth was a beautiful plant and samples were given away without cost, many people carried them away either to beautify a stream or in the mistaken belief that they would soon furnish free cattle food. In each case, the money aspect influenced the persons involved.

When the problem finally reached such proportions that the dollar earnings of navigation interests were adversely affected, the Congress acted and the work of clearing the streams was assigned to the Corps of Engineers at the turn of the century. After completing the surveys and plan of operation, the Engineers asked for approximately \$50,000 to do the job. Those holding the purse strings at the time cut the funds to \$10,000 and established a trend that has plagued the operators ever since. This drastic reduction in the first funds requested resulted in cutting the work to suit the dollars available and only a partial job could be done. It can be compared to a fire department extinguishing only half of a fire.

There was no real appreciation of the seriousness of the problem apparent in high circles and the very nature of the project led in later years to its description as a "project of the gardening variety calculated to keep the stream looking neat". The very thought of spending all those dollars on such a project prevented the detailing of a full time engineer and adequate equipment to the work at hand for many years. This unrecognized false economy caused the project to be assigned as a "part-time" job to anyone who happened to have the time to handle it. This condition existed in Louisiana for many years and is still on this same basis in many areas throughout the country where there are great numbers of noxious aquatic plants growing in the local waterways.

Over the many years that have followed the establishment of the project the old story of "too little and too late" has been the accepted policy rather than the exception. Again, the dollar sign has been the deciding factor of what could be done.

When I was first assigned to the project it was still a part-time job and the annual allotment was only about \$12,000. It soon became apparent that this amount was inadequate and that more dollars must be spent to make any kind of a showing. When the next request for funds named \$16,000 as the amount desired, there was consternation in the office and it was intimated that such wild spending would certainly lead to bankruptcy of the Government. When the requests for funds reached as much as \$20,000 everyone involved in the approval of such a request shook his head and wondered just where all this was heading. Today, the project for removing the water hyacinths from the navigable streams of Louisiana amounts to \$300,000 to \$4,000,000 annually, but instead of clearing just a few miles of waterway each year, thousands of miles of waterway are kept open to all navigation.

It became apparent in the early 1930's that the dollars being spent on the existing seasonal operation were not doing the job and that the water hyacinths, which were supposed to be killed by the winter weather, were growing steadily during the off season. It also became apparent that it was good business to invest a larger number of dollars to allow the work to continue during the entire year. For each plant destroyed during the winter it can be assumed to be equal to 500 plants in the summer.

In the early days, reporting the results of operations always mentioned the area in square yards and the cost was based on this unit. It was much better to report that the growth was being destroyed for only \$0.002 per square yard than to announce that it had cost \$9.68 per acre. This would have been considered an exorbitant cost in those days and might have led to misused corrective action. In contrast with this dollar value of the 1930's, the value of the work in 1967 for the navigation project was approximately \$300,000 in Louisiana for which 8,072 acres of vegetation were destroyed at a unit cost of about \$37.00 per acre. This cost includes all of the planning and overhead costs which find their way into Government work as well as the cost of all of the supporting plant, travel and other incidentals entering into this kind of work. This is generally higher than the target cost of \$25.00 per acre for which we strive.

Those engaged in private business probably can show a considerable saving over such costs since their overhead and hidden costs are generally much lower. A typical Government job is estimated as shown in Table 1. This is based on a single crew working from an established base and not on travel. Estimating that such a crew can cover 10 acres per working day, it is found that the work can be accomplished for about \$12.00 per acre.

The costs of destroying submersed vegetation in Lake D'Arbonne in north Louisiana 1967 are shown in Table 2 and amount to \$7.90 per acre. Good results were obtained and clear water was obtained about 3 weeks after treatment. Examination early in 1968 shows that the carry-over control was good.

TABLE 1. CHEMICAL CONTROL OF SURFACE VEGETATION, LOUISIANA.

Sprayman	8 hrs. @ \$3.75 per hour	\$ 30.00
Boatman	8 hrs. @ \$3.44 per hour	27.52
Supervision	1 hr. @ \$4.68 per hour	4.68
Truck	1 day @ \$5.00 per day	5.00
Supv. Truck	1 hr. @ \$5.00 per day	.62
Sprayboat	1 day @ \$2.50 per day	2.50
Chemical	10 gals. @ \$2.25 per gal.	22.50
Leave Burden (17%)		10.67
Overhead (14%)		14.47
	Total	\$117.86

The crew averaged 10 acres in an 8-hour work day. Application was made on floating, surface vegetation with the spraygun developed by the Engineers and using an in-line mixing device. Cost per acre—\$11.78 (say \$12.00).

TABLE 2. CHEMICAL CONTROL OF SUBMERSED VEGETATION,  
LAKE D'ARBONNE.

Sprayman	8 hrs. @ \$3.44 per hour	\$ 27.52
Boatman	8 hrs. @ \$3.25 per hour	26.00
Supervision	1 hr. @ \$6.50 per hour	6.50
Salaries		60.02
Leave Burder (17%)		10.20
Truck	1 day @ \$10.00 per day	10.00
Equipment	4 year economic life	1.04
Chemicals	30 gallons @ \$2.25	67.50
Fuel and Oil		1.10
Per Diem	2 men @ \$13.00 per day	26.00
Overhead (8%)		14.06
	Total	\$189.92

During this operation, a total of 24 acres of vegetation was treated in an 8-hour workday. Application was over the stern of the boat and approximately 12 inches below the water surface into the upper part of the vegetation. Cost per acre for this pilot operation—\$7.90.

The figures which have been quoted are for chemical control operations. Mechanical destruction, which accounted for less than 3% of all control work in 1967, may have a price tag as high as \$45.00 per acre. This is special work, difficult in nature and in isolated locations. Normal destruction by mechanical means such as used in Louisiana are shown in Table 3 and may be as little as \$25.00 per acre. Because of the very nature of the operations and the higher rental rate of the equipment it is only natural that mechanical destruction would be more expensive than destroying the vegetation in the same area by chemicals if such could be accomplished.

The streams in Louisiana were virtually free of the troublesome plants a short time ago when all travel

TABLE 3. MECHANICAL DESTRUCTION OF SURFACE VEGETATION,  
LOUISIANA.

Destroyer No. 11	\$185.00	Destroyer No. 2	\$ 8.00
Boat	0.00		20.00
Truck	5.00		5.00
Operator	27.12		27.12
Boatman	24.96		24.96
Deckhand	21.04		0.00
Supervision (1 hour)	4.68		4.68
Supplies	12.00		12.00
Leave (17%)	13.23		9.65
Overhead (14%)	41.04		15.60
Total Cost per day	\$334.17		\$127.01
Cost per acre (10 acres)	\$ 33.42	(5 acres)	\$ 25.40

Large Destroyer is self-propelled with a capacity of 10 acres per day. Small destroyer is non-self-propelled with a capacity of 5 acres per day. Mechanical destruction used to break jams and cut entrance ways for spray-boats in tightly packed vegetation.

was curtailed and normal winter operations had to be abandoned in deference to the dollar. Other dollar economies called for at the same time coupled with the advent of hurricanes and drought conditions exposed millions of seeds and resulted in a bumper crop of aquatic vegetation. Thus the shortage of dollars in a critical period caused a serious situation which required several months of extra work to control and bring back to normal. We are again faced with a reduction in dollars and a repetition of the same problems unless the situation can be corrected in time.

Thus, as a yo-yo bounces up and down at the command of its operator, so does the effectiveness of aquatic growth control in Louisiana change with the number of dollars made available for this essential work.

The overall area of operations in Louisiana is fixed by the growing habits of the noxious vegetation and requires regular maintenance operations throughout the whole area of growth. It cannot be reduced in any great degree until some suitable treatment is found for all of the plants involved. The trained crews and special equipment must be maintained and the fixed costs of supervision and administration remain constant. Therefore when the dollars are plentiful, the control operations can be carried out on a full scale with good results, but when the dollars become scarce, the only thing that can be reduced is the actual operations in the field and the situation is lost. Despite efforts to maintain the dollars available at a constant level year after year, this item changes with the mood of those who control the dollar supply. The amount supplied for the work continues to fluctuate from year to year.

When dollars are available, good results can be obtained over a wide area and public satisfaction can be anticipated. When dollars are scarce, essential operations must be curtailed and the overall condition of the waterways with respect to aquatic vegetation deteriorates while the users of the streams suffer accordingly and public complaint is heard all the way to the Halls of Congress.

Thus, successful control operations are tied directly to the dollar sign and until this is recognized, we might just as well accept the fact that "The Dollar is King" and the success or failure of the aquatic vegetation control operations will vary accordingly.

In summation, it might be noted that the basic cost of destroying the unwanted plants in Louisiana is about \$8.00 per acre for submersed plants, and about \$12.00 per acre for surface plants when chemicals are used and between \$25.00 and \$35.00 when mechanical means are employed. These are reasonable prices. But even so, the dollars made available for the work control the number of streams that can be cleaned. If we really want our streams to be clean, it will cost dollars—many of them.