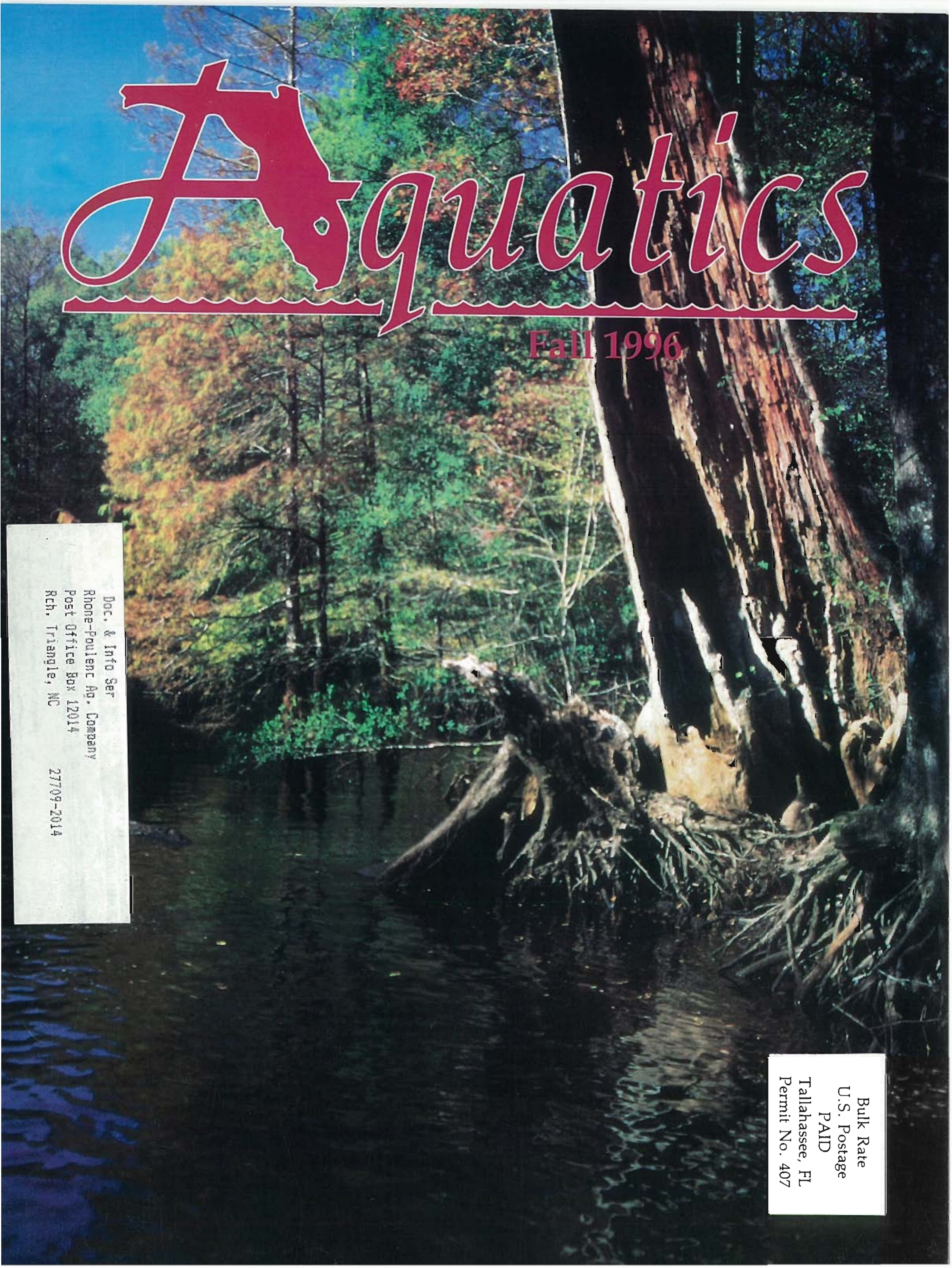
Aquatics

Fall 1996



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Letter to the Editor

I found the recent article in *Aquatics* magazine by David Girardin *(So, is it One Word, Two Words, or Hyphenated?)* about the correct way to write the common name for *Eichhornia crassipes* to be interesting reading. I am sure this is a question considered by many who have dealt with this species. However, the last sentence in the article (see below) labeled editor's note may be somewhat controversial if not downright derogatory of computerized spell checkers everywhere.

"Editor's note: For those of you using Word Perfect, I just found out that the spell checker makes waterhyacinth two words, unhyphenated, which is incorrect by anyone's standards."

Two recently published books both use the two-word "water hyacinth" as the common name of this species. In fact this name appears in the caption of the frontispiece of the recent book by Pieterse and Murphy (*Aquatic Weeds: The Ecology and Management of Nuisance Aquatic Vegetation*, 1993, Oxford University Press). The eminent taxonomist Christopher D. K. Cook in his guide to aquatic plants of the world (*The Aquatic Plant Book*, 1990, SPB Academic Publishing) also uses the two-word "water hyacinth" as the common name. It appears that well-respected European scientists consider water hyacinth, without a hyphen or not written as one word, to be correct. Maybe Word Perfect's spell checker isn't wrong after all.

Sincerely,

David Spencer

As fall colors once again decorate the Withlacoochee River, I can't help but wonder what happened to the summer.
Photo by Jim Kelly, Florida Department of Environmental Protection

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CONTENTS

AQUATICS (ISSN 1054-1799): Published quarterly as the official publication of the Florida Aquatic Plant Management Society Registration No. 1,579,647. This publication is intended to keep all interested parties informed on matters as they relate to aquatic plant management particularly in Florida. To become a member of FAPMS and receive the Society newsletter and Aquatics magazine, send $20.00 plus your mailing address to the Treasurer.
EDITORIAL: Address all correspondence regarding editorial matter to Ken Langeland *Aquatics* Magazine.

Barley Straw for Algae Control

A barley straw "sausage" is applied for the purpose of controlling algae in a canal near Dublin, Ireland.

by Eldridge Wynn and Ken Langeland, Agronomy Department, Center for Aquatic Plants, IFAS, University of Florida Gainesville

Introduction

Algae are the base of the food web in aquatic systems, are the primary source of oxygen in water, and contribute to waste removal. However, under certain circumstances (i.e., an abundance of nutrients) dense algae populations in the form of phytoplankton blooms or mats of filamentous algae become objectionable. Algae can cause problems in a number of ways, which include clogging of pumps, tainting the flavor of fish, and rendering potable water unsafe for consumption. As blooms of algae die, available oxygen is rapidly depleted and "fish kills" can occur. Methods for managing problem algae are limited and aquatic plant managers and researchers are continually looking for new methods. A recently studied method that shows potential for controlling algae is the use of decomposing barley straw.

History

The discovery of barley straw's antialgal activity was quite by accident. As the story goes, in 1980 an observant farmer accidentally dropped some straw in a lake and noticed that the growth of filamentous algae was reduced during the following year. There have since been a number of studies performed in the United Kingdom that suggest the presence of decomposing barley straw in water can inhibit the growth of algal species. In 1990, Welch et al. reported results from a field study in which bales of barley straw were applied and allowed to decompose in a canal that contained large populations of *Spirogyra* spp. and *Cladophora glomerata* . After three years of application, algal growth declined. It was determined that neither limiting nutrients nor invertebrate grazers caused the decline in growth (Welch et al., 1990). A subsequent study also ruled out fungi as the source of inhibition indicating that the reduced growth was the result of some other phenomenon (Pillinger et al., 1992).

In laboratory studies, Gibson et al. (1990) found that decomposing barley straw reduced growth of all strains of filamentous and planktonic algae tested. The liquid in which the straw was decomposing was also inhibitory to algal growth. The effect was inactivated if the extract was filtered through activated carbon, providing strong evidence that the inhibitory effect was caused by an organic compound or compounds. Growth of blue-green algae and diatoms has also been found to be inhibited by decomposing barley straw. In laboratory cultures, barley straw applied at a rate of 2.5 g (dry weight) m^3 water reduced growth of the blue-green algae *Microcystis aeruginosa* by 95% when compared

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to control cultures (Newman and Barrett, 1993). A field study performed in a potable supply reservoir resulted in the clearing of the water within months of application and a decrease in diatom and blue-green algal cell counts when compared to previous years. No adverse effects to the environment or water quality were noted (Barrett et al. in press). A study performed by Everall and Lees (1996) achieved similar results. During the field studies it was observed that the barley straw had no deleterious effect on aquatic vascular plants, invertebrates, fish or waterfowl. In fact, it was noted that the straw increased the number of invertebrates by providing habitat and food. This increase is said to have lead to improved growth and health in fish as their food supply was increased.

The exact mechanism by which decomposing barley straw controls algae is unknown. The chemical(s) released upon straw decomposition do not kill the algal cells that are present but rather prevent the growth of new cells (Newman and Barrett, 1993; Newman, 1994). One theory is that during decomposition, lignins released from the straw are oxidized to humic substances which, upon exposure to sunlight and dissolved oxygen, form hydrogen peroxide, a substance known to inhibit growth of algae (Newman, 1994).

The Future

Jonathan Newman of the Long Ashton Research Station (UK) expresses confidence in the practice of using barley straw for algae control in the United Kingdom, where research thus far has been conducted: "When algal problems occur in water bodies ranging from garden ponds to large reservoirs, lakes and rivers, barley straw offers an environmentally acceptable and cost-effective form of control." However, the United Kingdom, is a temperate country with a near constant overcast and the effectiveness of this method of controlling algae in the United States is still in question, especially in the southeast where warm temperatures prevail and barley is not commonly grown. Research and experience will be needed to answer the question and perfect the method.

A project between Sea World and the Institute of Food and Agricultural Science (IFAS) of the University of Florida will investigate barley straw's potential as an algae control agent in the subtropical climate of Florida, examine the antialgal potential for other plant residues, and gain a better understanding of the mechanism of algal inhibition.

The following guidelines, summarized from an information sheet by Jonathan Newman, are provided for pond owners who wish to experiment with barley straw. We will welcome any information that you provide to us based on your observations and we can help share your information with others. Send written correspondence to:

Barley Straw
IFAS, Aquatic Plant Information Retrieval System (APIRS)
Center for Aquatic Plants
7922 NW 71st Street
Gainesville, Florida 32653 USA
or
e-mail to: kal@gnv.ifas.ufl.edu.

Current literature searches on this and related topics can also be obtained from the APIRS.

1. Straw should be applied twice each year, preferably in early spring before algal growth starts and in autumn.
2. Particularly in static waters, the straw should be in loose form through which water can pass easily and should be held in nets, cages or bags.
3. The minimum effective quantity of barley straw in still or very slow flowing water is about 2.5 g m^2 (0.0082 oz ft^2) but higher dose of up to 50 g m^2 (0.16 oz ft^2) should be used in densely infested waters and muddy waters.
4. In rivers, masses of straw (bales or nets) should be spaced along the sides at intervals not more than 100 m apart.
5. Straw should be supported by floats so that it does not sink to more than one meter (three feet) below the surface, even when waterlogged. If the straw starts to smell then it is not working and should be removed. This is caused by too much straw in too little water." As a rough guide, it may take 6-8 weeks for the straw to become active when water temperatures are below 10 C but only 1-2 weeks when the water is above 20 (Newman, 1994).

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Everall, N.C. and D.R. Lees. 1996. The use of barley-straw to control general and blue-green algal growth in a Derbyshire reservoir. Wat. Res. 30:269-276.

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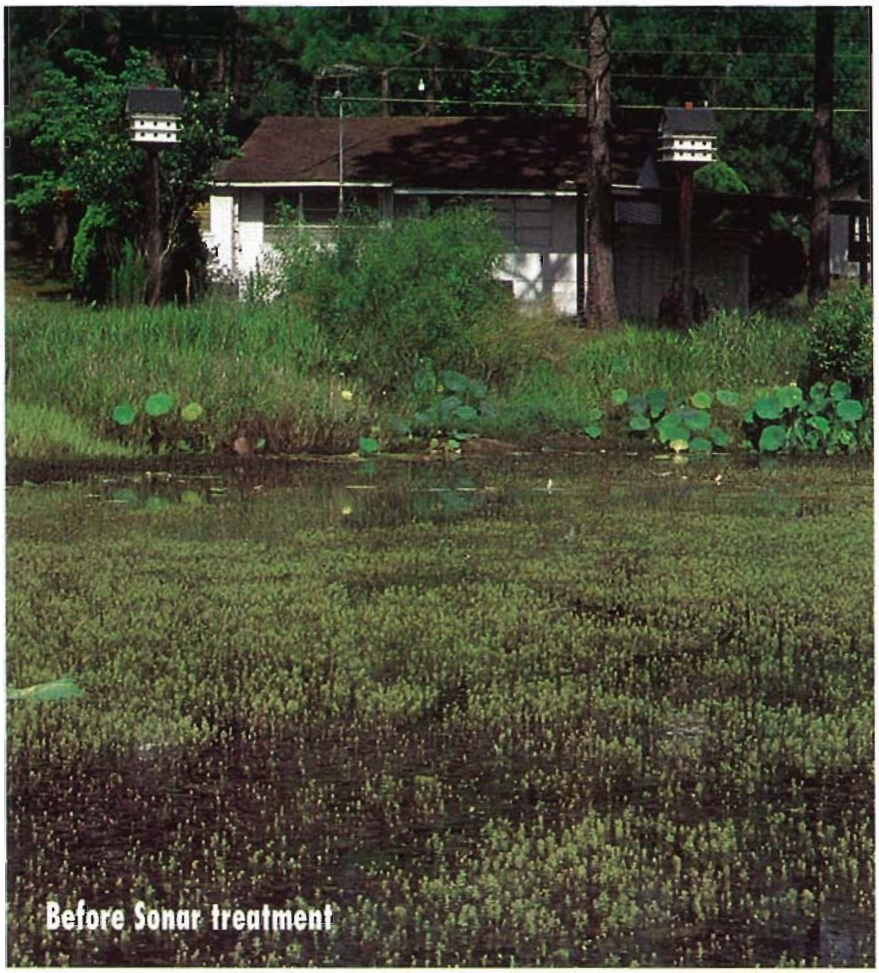

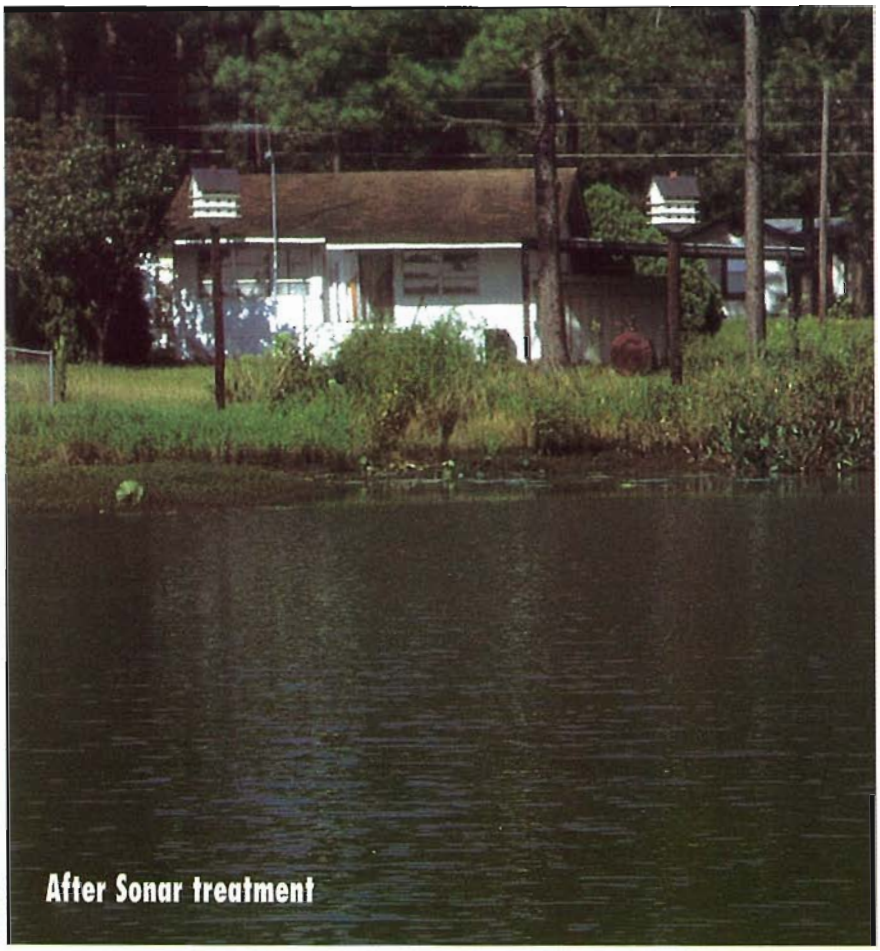

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Spider-Grass
↳ Usually Not a Problem...

by James L. (Jimbeau) Wilmoth, President Aqua Plant Control Gainesville, Florida and Ken Langeland Agronomy Department, Center for Aquatic Plants, IFAS, University of Florida

Introduction

Like many native plants that are not of economic importance, little information is available on spider-grass ((*Websteria confervoides* (Poir.) Hooper) (=W. Submersa (Sauv.) Britt., *Scirpus confervoides* Poir. In Lam.)). While this plant does not usually become a problem, when information was needed on control virtually none was available. A literature search of the Aquatic Plant Information Retrieval Service data base at the UF/IFAS Center for Aquatic Plants resulted in only seven citations, none of which provided helpful control information and no one had any experience (that they were willing to admit) controlling it. Like all plants, especially aquatic plants, spider-grass is fascinating when you take the time to look closely at it, and it may be there more often than you realize. This article will discuss distribution, identification, and the interesting growth habit of spider-grass and one successful program to control it.

Distribution

Spider-grass occurs in Florida and tropical America (Godfrey and Wooten 1981). In Florida, it is a relatively uncommon plant that tends to occur in acidic, soft water lakes of the northern and central part of the state (Hoyer et al. 1996). In a survey of 322 Florida lakes by Hoyer et al. (1996), spider-grass occurred in only 36 and these lakes averaged significantly lower pH, alkalinity, specific conductance, calcium, magnesium, sodium, and potassium than all other lakes in the survey. While spider-grass is relatively uncommon it may sometimes go overlooked because of its similar appearance to other aquatic plants, such as proliferating spike-rush (*Eleocharis baldwinii*).

Identification

Spider-grass is a slender, rooted, submersed perennial that sometimes forms floating mats. The stems are threadlike (capillary) and unbranched to the first node. The stem is terminated at the node by a small bud with a single bract and growth point. This bud is potentially a flower stalk but it rarely develops into a flower. Clusters or whorls of from 3 to 12 branches develop from these terminal buds. Clusters elongate 3 to 25 cm (1 to 10 in) and each may in turn give rise to another whorl of branches. Branches are enclosed in a colorless or translucent membranous sheath. Flowers occur on a solitary spikelet 1 cm (0.5 in) long, on a slender stalk one to several cm. long, which is held above the water during expansion of the flower from the bud. Flowers are inconspicuous, but for the curious observer, close examination reveals the delicate reduction of floral parts,

Spider-grass ((Websteria confervoides (Poir.) Hooper)) showing threadlike stems, whorl of branches arising from a terminal bud, and, if you look very close, translucent, membranous sheaths.

which is indicative of a highly advanced flowering plant. Achenes (hard, dry, indehiscent, 1-seeded fruit) are olive to olive-brown, 3.2 mm long, and indistinctly pitted, with six to 8 bristles, which are longer than the achene and have fine, short barbs that are turned down toward the base.

The combination of characteristics described above are definitive for spider-grass. However, proliferating spike-rush, which has a similar growth habit and grows in similar habitats, can be confused with spider-grass. In comparison to the characteristics described for spider-grass, proliferating spike-rush has leaf sheaths that are reddish, unequal sided, and loose; and achenes that are only 0.5 to 0.8 mm long, with unequal bristles that are shorter than, equaling to or exceeding the achene.

Control

As the process of branching described above continues, spider-grass may become very diffuse, form floating mats, and become problematic. Such was the case in a 1.5-acre pond in Highlands County in south central Florida. The pond had an average depth of 7-ft, pH of 6.0-6.5 and was 50% covered with topped out spider-grass, 40% spike-rushes (Eleocharis spp.), and smaller amounts of filamentous algae, bog-moss (*Mayaca fluviatalis*), and baby tears (*Micranthimum umbrosa*).

One-third of the pond (1/2 acre) was treated with 100 lb of 2,4-D amine granular (Riverdale) on March 19, 1996. During a May 13 survey of the pond, all plants other than spider-grass displayed expected symptoms in the treated portion of the pond and were unaffected in the untreated portion. Spider-grass, on the other hand, was still observed on the surface in both the treated and untreated portions of the pond and appeared to be little affected by the 2,4-D. At this time, a second 100 lb application of 2,4-D was made to a $^1/_2$ acre portion of the pond that had not previously been treated. On June 4, the pond was free of all target plants other than spider-grass. However, the spider-grass was now about one foot below the surface and showing strong herbicide injury symptoms, i.e. yellowing and mushy to the touch. A third and final 100 lb of herbicide was then applied with even distribution directly to the spider-grass mat. Finally, an August 5 survey, thankfully, revealed that spider-grass, along with other target plants had been successfully controlled.

Summary

Spider-grass, like all aquatic plants, is unique and interesting and the more you learn about them the more interesting they become. In the case of spider-grass, much more can be learned. But like many other aquatic plants, spider-grass can be a weed, a plant out of place, as it was in the Highlands County pond. It was found that spider-grass, while apparently more tolerant than some other target plants, can be controlled with sequential applications of 2,4-D (equivalent to a label rate), an environmentally friendly, registered aquatic herbicide. And another happy pond owner has what he wanted "a pond that looks like a golf course pond with no weeds and trophy bass."

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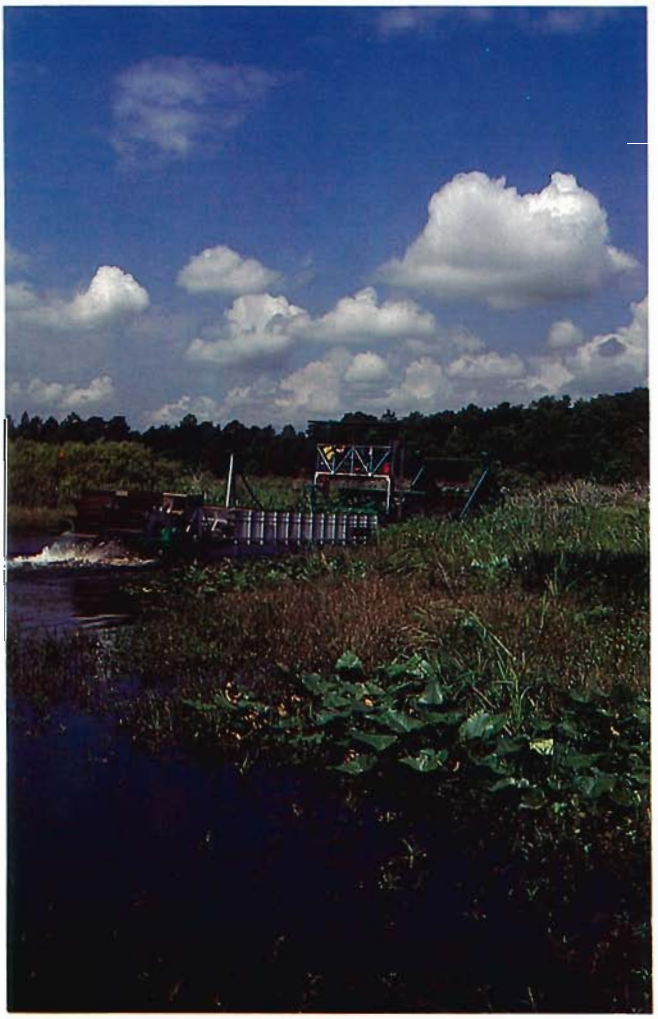
Evaluation of the Kelpin 800 Aquatic Weed Harvester

Orange Lake, FL 1995

by William T. Haller
Agronomy Department, Center for Aquatic Plants University of Florida, Institute of Food and Agricultural Science

Introduction

Thayer and Ramey (1986) compiled a review of aquatic weed mechanical harvesting technology 1n 1986. The machines typically in use at that time were similar to the Aqua-Trio system consisting of a harvester, transport barge and shore conveyer. The large harvesters evaluated were the side paddle wheel powered Aquamarine Mudcat and Altosar units. These machines typically cut to water depths of 5 feet, were 8' wide and had cargo capacities of 10 to 20 cubic yd (5 to 7 tons).



The 70 ft long 15 ton Kelpin 800 harvester removing floating islands on Orange Lake, Alachua County, Florida. photo by Jim Kelly

The contract prices for hydrilla and water hyacinth control by these and other machines were compared for a 20 year period (21 Florida contracts) in 1985 dollars. The cost of hydrilla control varied from $500 to $1100/acre and water hyacinth harvesting from $4,400 to $13,673/acre. The variation in these costs is largely dependent on the cost of transporting harvested material to disposal sites. In fact, Sabol (1981) reported that harvesting costs were reduced by 50% when using in-lake disposal compared to transporting vegetation to shore, conveying into a truck, and trucking to disposal sites.

Thayer and Ramey summarize their report by stating, "Existing mechanical equipment for managing aquatic plants is limited and the future growth of this inherently small market is restricted because of technical and economic obstacles."

Progress in mechanically handling aquatic vegetation has been very limited in the past 50-100 years. Improved efficiency of harvesting can

occur primarily in harvesting more acres per day. Increased speed of harvesting or increased capacity of the harvester resulting in less off-loading/transport time between loads would result in greater efficiencies.

The Kelpin Harvester was designed and built by Mr. Tom Kelpin of Houston, TX in the late 1980's. Since his death in 1990, the Kelpin machine has spent much of its time in storage and has never been independently evaluated.

In the spring/summer of 1995 it was obvious that rising water levels in Florida lakes and rivers following a prolonged drought were going to result in tussock (floating island) formation and increased weed problems (water-hyacinth).

The owners of the machine were contacted and a cooperative evaluation project was developed between the Florida GFC and the Center for Aquatic Plants. The Kelpin Harvester was launched by crane into Orange Lake on June 16, 1995 and remained until August 22. It was then trucked to Lake Kissimmee for further evaluations.

The harvester is 70 feet long and weighs 15 tons. It has to be transported on an extendable low-boy (60') which is escorted by front and rear escort vehicles (Federal highway law). Depending upon distance travelled, transportation costs vary from $2 to $4/mile. Highway permits are obtained by the trucking service and are necessary because the load is over width and over length.

Once at a launching site the harvester has to be launched by cranes. At Orange Lake, two 30 ton cranes easily lifted the harvester from the truck and into the canal at Rawlings Park. The cranes (Suncoast Aerial) were on site for three hours and the cost was $150 per crane/hour. Crane costs and the size required to swing the harvester into the water varies greatly depending upon the span to cover, soil stability, and whether a single or two cranes are utilized. This activity seems to be more art than science, but it's best to figure on about $1,000 for crane launching/removal operations.

TABLE 1. Overall characteristics of the Kelpin 800 harvestor, Orange Lake Trials Summer 1995

Overall Length	70 ft	21.2 m
Transport Height	7 ft	2.1 m
Operating Height	17 ft	5.2 m
Weight	15 tons	13,600 kg
Draft (empty)	20 inches	50 cm
Draft (loaded)	36 inches	90 cm
	Conveyor	
Conveyor (length)	20 ft	6.1 m
Conveyor (width)	9.5 ft	2.9 m
Cutting Depth	5.5 ft	1.7 m
	Storage Bay	
Length	29 ft	8.8 m
Width	10 ft	3.0 m
Height to rail	2.75 ft	0.85 m
Capacity (vol)	30 yd^3	23 m^3
Capacity (weight)	12 tons	11,000 kg
	Speed	
Unloaded @ 1500 RPM	3.97 miles/hr	6.4 km/hr
Loaded @ 1500 RPM	4.04 miles/hr	6.5 km/hr
	Fuel/Power	
Diesel Fuel	1.0-1.5 gph	3.7-5.7 l/hr
John Deere 6 Cylinder	120 h.p.	___

The harvester is surprisingly maneuverable. The rear paddle wheels are split and can be operated in opposing directions enabling the machine to turn around in a 60-70' diameter circle if the front conveyor is raised above any obstacles. The draft of the machine when empty is 20-22 inches and its speed depends upon the engine RPM, but we typically made 4-6 mph at 1500-1800 RPM. Steering the machine was accomplished by regulating the RPM on the rear paddle wheels and due to the weight (15 tons) of the machine you must anticipate maneuvers well ahead of time. The machine is affected by wind. In strong winds it's most efficient to operate (harvest and transit) directly into or with the wind.

The harvester's overall characteristics are listed in Table 1. The machine consists of three major hydraulically operated moving parts. The cut vegetation is moved onto the pontoon barge by the front conveyor. The front conveyor is also used for unloading by raising it up and reversing the conveyors. A hydraulic "rake" moves piles of vegetation to the rear of the barge, or front if off-loading. The rake slightly compresses bulk loads such as cattail and water hyacinth. The final main operating parts are the split paddle-wheels at the rear of the boat. These are independently operated and used for steering, stopping or turning.

Floating Plants

During the summer 1995 trials on Orange Lake, we had few water-hyacinths to work with so we conducted our evaluations on frogsbit. The fresh weight of the frogsbit was determined by sampling 4-0.25 m^2 areas and weighing on a milk scale (Table 2). The Orange Lake frogsbit weighed approximately 200 tons/acre, typical of floating vegetation. The Kelpin Harvester was loaded with frogsbit and the length of the harvester swath was determined. The loading and unloading times were then measured with a stop watch. From these data we were able to calculate the total time to harvest/unload 1 acre (5 hours) and determined the machine output at

TABLE 2. Performance characteristics of the Kelpin 800 harvester on floating plants in Orange Lake, Summer 1995

Floating plants:	200 tons/acre
Frogsbit and/or	45.3 kg/m²
Water Hyacinth	224.5 m. tonnes/ha 93% water

Typical load under above conditions

swath=	225' (68 m) long x 9.5' (2.9 m) wide
swath area=	237.5 yd² (197m²)
swath weight=	19,712 lbs. (9.8 tons/load)
=	8,960 kg

Loading time	9 minutes
unloading time	6 minutes
total	15 minutes/load without transport time

Time to harvest and unload/acre:
.05 acres/15 minutes
1.0 acres in 300 minutes = 5 hours/acre or 12.4 hours/ha
Tons/hour = 40 tons

determined the machine output at 40 tons/hr.

Submersed Plants

The performance characteristics of the Kelpin Harvester were determined by harvesting surface matted hydrilla. Hydrilla in Orange Lake typically weighs 13 tons fresh wt/acre. The harvester cut to a depth of 5.5 ft deep and cut a swath 9.5 ft wide by 1700 ft long. This required 18 minutes to load (94 ft/minute = 1.1 mph) and 7 minutes to unload. Extrapolating these data produces the time to harvest 1 acre of hydrilla (68 minutes) with an output of 11.4 tons/hr (Table 3).

We were unable to measure the weight of the hydrilla in Orange Lake and believe it may be heavier than 13 tons/acre. Studies (Haller et al. 1980) which we have conducted in the past indicate that surfaced hydrilla in lakes typically weighs 12-13 tons/acre (Lake Orange, Baldwin and pond studies), but attached filamentous algae may make these values very conserva-

tive. During these tests, the harvester was filled with vegetation and it appeared much more heavily loaded than the data indicates (4.8 tons). Without trucks and/or truck scales or a more accurate means of measuring hydrilla biomass we report these apparently conservative weights until additional data are available.

Floating Islands

Floating islands form along lake margins during periods of low water levels. During subsequent high water conditions these plants with associated root mass lift from the organic lake bottom and become wind driven.

Due to normal or above normal rainfall in 1995, Florida lake levels have risen and floating islands (tussocks, sudds, floatons, etc.) have become very common in many Florida lakes. There appears to be no such thing as a typical floating island and based upon experience operating this harvester, there are no typical

TABLE 3. Performance characteristics of the Kelpin 800 harvester on typical submersed vegetation in Orange Lake, Summer 1995.

Hydrilla or other submersed plants		
Ex: Surface matted hydrilla	13	Tons/acre
	3	kg/m^2
	5.4	lbs/yd^2
	29.2	M.Tonnes/ha
	96%	Water
Typical load under above conditions		
swath =	1,700 ft (515 m) long x 9.5 ft (2.9 m) wide	
swath area =	0.37 A; 1,794 yd^3; 1,500 m^2	
swath weight =	9,620 lbs (4.8 Tons/load)	
=	4.373 kg/load	
Loading time	18	minutes
Unloading time	7	minutes
Total time w/o transport	25	minutes

Time to harvest and unload 1 acre:
.37 acres/25 minutes
68 minutes/acre or 168 minutes/hectare (2.8 hrs).
Tons hour = 11.4 tons

weights or volumes to floating islands. Their weight is dependent upon the amount of silt (mud) that is attached to the roots of the plants which constitute the islands and each plant seems to hold different amounts of silt. Generally, floating islands are very heavy.

The Kelpin Harvester was designed for harvesting floating and submersed vegetation. The Florida Game and Fresh Water Fish Commission measured floating island weights of 20 lbs/ft^2, or 435 tons/acre in Lake Kissimmee. We suspect some floating islands may be much heavier, some lighter but for sure their weights are extremely variable.

Based upon the estimates for floating islands noted above (20 lbs/ft^2) and assuming a typical load of 11 tons, we timed the loading and unloading of floating islands in Orange Lake (Table 4). We typically handled 3 loads/hour and most were very heavy. Conse-

TABLE 4. Projected values of floating island removal by the Kelpin 800 harvestor, Summer 1995. See text for explanation of estimates.

Tussocks or floating islands consisting of Primrose, Grasses, Bidens, Pontederia, etc. by GFC, Kissimmee

20 lbs wet wt/ft^2
871,000 lbs/acre
435 tons/acre

Typical load under above conditions (11 tons/load)

swath = 115 ft long by 9.5 ft wide
swath area = 1,100 ft^2
swath weight = 22,000 lbs/11 Tons

Loading time	12	minutes
Unloading time	8	minutes
Total	20	minutes without transport

Time to harvest and unload 1 acre (39.5 loads)
3 loads/hour; 13.2 hours/acre
Tons/hour = 33 tons

quently we estimate 33 tons/hour and 13.2 hours to harvest 1 acre of floating island.

Summary

The Kelpin Harvester can operate more efficiently than the harvesters previously evaluated by Thayer and Ramey (1986) largely due to its size, simple design, and carrying capacities. Even at costs of $200/hour, the Kelpin Harvester can harvest 1 acre of hydrilla for $230/acre and an acre of water hyacinth for $1000/acre.

The machine can travel at similar speeds loaded or unloaded due to the greater water depths the paddle wheels are pushing under loaded conditions. It is well suited to harvesting floating and submersed plants.

The regular harvesting of floating islands was not originally intended for this machine, but an experienced operator can compensate for this. The conveyor is 20 ft long and 9.5 ft wide (190 ft^2). At 20 lbs/sq ft, the fully loaded conveyor will hold 1.75 tons of floating island which is beyond its capacity. Handling such heavy materials must be done carefully.

There is very little known, and even less published in scientific literature with regard to floating islands. Following these evaluations we know that in general the weights of an area of hydrilla < water hyacinth < frogsbit/scirpus < spikerush/bladderwort < cattails < saltbush/ludwigia < pontederia < willow/maple, depending upon how much soil remains attached to the plant roots.

Acknowledgements

These evaluations were made possible by funds from the Florida Game and Freshwater Commission. We appreciate the cooperation of Jim Vaughen of Texas Aquatic Harvesting, the many interested private citizens and the commercial fish camp operators on Orange Lake, for periodically providing transportation and refreshments.

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Sabol, B.M. 1987. Environmental effects of aquatic disposal of chopped hydrilla. J. Aquat. Plant Manage. 25: 19-23.

Thayer, D.T. and V. Ramey. 1986. Mechanical harvesting of aquatic weeds 1986. Unpublished manuscript Center for Aquatic Plants, University of Florida, IFAS, Gainesville.

Custom Insurance Program for APMS Members Aqua-Pro Risk Management Receives National Board of Directors Support

The Board of Directors of the Aquatic Plant Management Society gave their support to Aqua-Pro Risk Management's new product "Aqua pro" at the Society's 36th Annual Meeting held July 13-17 in Burlington Vermont. Aqua pro is a custom insurance program designed specifically by aquatic treatment industry expert Richard Hinterman, owner of Aquatic Nuisance Plant Control and Cygnet Enterprises of Flint Michigan; Michael Hall of Cobb-Hall Insurance Agencies in Howell, Michigan; and Pat Maloney Senior Vice President of Mcalear and Associates, a specialty wholesaler in Grand Rapids, Michigan.

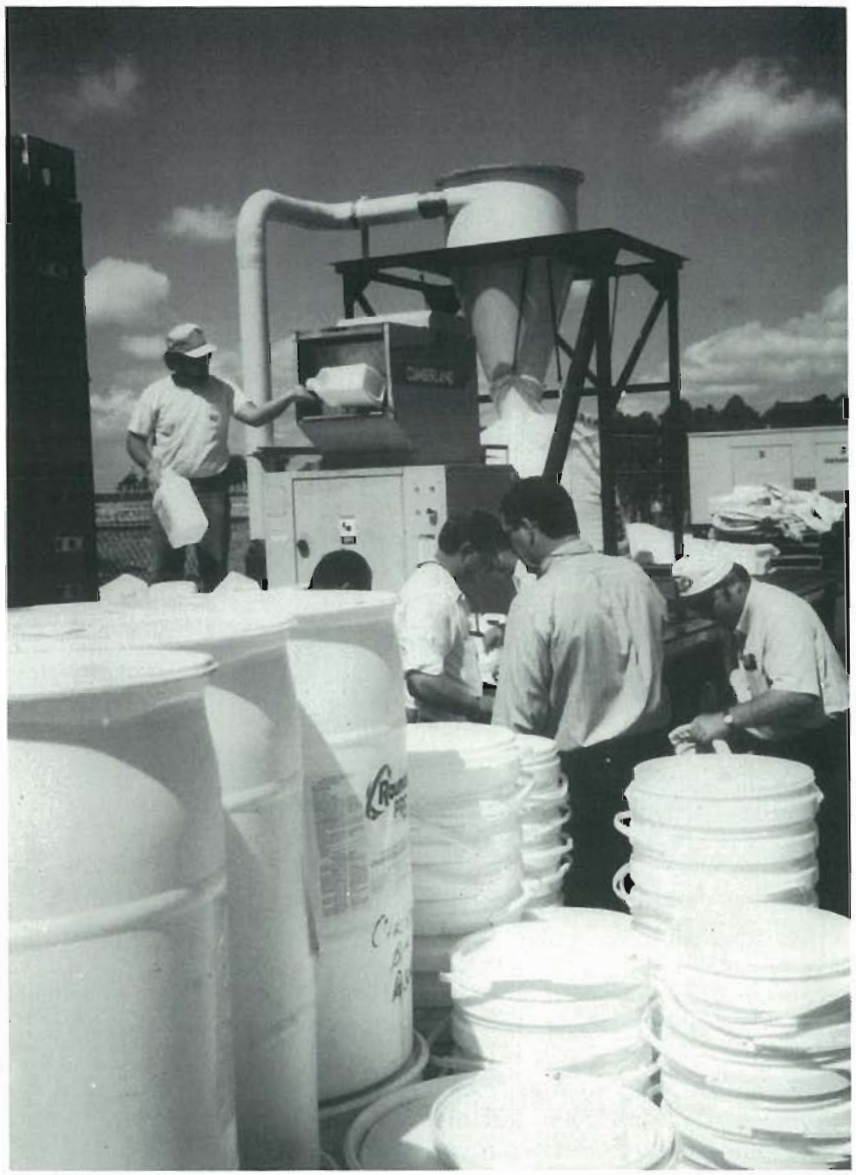
Aqua-Pro brings unique protection to the client. Says Hall "the first program of its kind, ever.... To meet the many exposures of the water treatment industry. Our program provides coverage for chemical application, aquatic plant harvesting, dredging, consulting, chemical sales, equipment sales, water quality testing and fish restocking. Our program will be written out of our Howell office and service the members across the U.S." The company issuing "Aqua-Pro" policies is General Star, a best A++ rated company out of Chicago. General Star has developed the reputation within the insurance industry as being experts at representing high quality products within environmentally sensitive industries. We are honored by the respect and commitment exhibited by the society and look forward to a long term relationship with this industry. Our plan is to be as accessible as possible to membership, having established 888 pro-apms or e-mail proapms@aol.com for inquires. We will also have a booth and be present for help and information at the Florida Aquatic Plant Management Society Annual Meeting at Fort Myers in October.

Recycle Containers

It's the Right Thing To Do

by Tim Hurner, Pesticide Recycling Coordinator University of Florida, Institute of Food and Agricultural Science

Aquatic weed control specialists now have another opportunity to showcase their role in Florida as active environmentalists and stewards of our natural resources in choosing a new disposal method for their empty pesticide containers. A voluntary program to recycle plastic pesticide and other crop protection containers is now a reality in Florida. A significant percentage of the pesticides used in Florida are those used to control aquatic weeds in Florida waters. It is essential to be good stewards in disposal of the used plastic pesticide containers following the aquatic pesticide application. In choosing recycling as the means of disposal of plastic pesticide containers the aquatic applicator will indeed help conserve our natural resources and reduce environmental contamination.



Granulation of pesticide containers at Disney World, Parks Pest Control Headquarters. Since beginning the program last March the Disney container recycling program has collected more than twenty one-hundred containers, primarily from their Parks Pest Control and Aquatic Weed Control Divisions. They will soon be including their Golf Course, Resorts, Nurseries, and other Divisions. It is a real testimony to how they are committed to doing the right thing. On the left is Shawn Lewis with SCT Environmental (the southern regional recycler for pesticide containers) feeding the granulator; in the center left is Jim Warneke, Manager, Disney Pest Management; center right (back to camera) is Jeffery Kosik, Disney Environmental Compliance Department; and on right is Art Mathison , Supervisor, Walt Disney World Parks Pest Control Division who started the program for Disney.

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In 1992, the pesticide and other crop protection product industry joined together to form the Agricultural Container Research Council (ACRC) to develop the best method to distribute pesticides considering the need for container disposal. They focused on plastic (HDPE, type 2) to be the container to deliver liquid pesticides to the consumer since it had the potential to be recycled. Metal, glass, and other containers were removed from the pesticide material delivery stream, because of disposal problems.

The ACRC, in order to insure the future for recycling of pesticide containers, has developed a system to granulate used plastic containers and ship the granulated product to a recycling center for remanufacture into useful end-products.

Shipping pallets are presently being manufactured from the used containers. The pallets are used to ship pesticide containers back out to the applicator. The cost is proportionately shared by the chemical manufacturers through the ACRC; therefore the cost of the recycling is already paid for when the consumer buys the product.

The HDPE plastic container can be rinsed easily into the spray tank after the contents are emptied. The container can then be stored, and later delivered to a Pesticide Container Recycling Collection Center. Local collection centers are being established around the state for pesticide applicators to carry their empty containers to for recycling. Tim Hurner, the Pesticide Container Recycling Coordinator, working for IFAS in the Pesticide Information Office is coordinating the establishment of collection centers in all of the counties. The effort is funded by the Florida Department of Environmental Protection (FDEP) to encourage voluntary recycling rather than mandating such a program.

Applicators can presently dispose of their containers in certified landfills; however, burial of used pesticide containers is costly and has the potential for environmental consequences This means of disposal also contributes to unnecessary landfill loading.

It is not difficult to store the rinsed pesticide containers and when enough are collected to warrant a trip, deliver them at no cost to the pesticide container recycling collection center. If the applicator has the means to store approximately 1,500 containers, the granulator will come to the applicator's site and granulate the containers for him.

If there is not a plastic pesticide container collection center in your county, you can contact your County's Cooperative Extension Office to see the status of the development of a collection center in your area or contact Tim Hurner, Pesticide Container Recycling Coordinator, IFAS, 4509 W. George Boulevard, Sebring, FL 33872-5803, telephone (941) 382-2509.

Plastic pesticide container recycling is economical and good stewardship of our environment and of our natural resources. It's the right thing to do!

You Might Be a "Nozzle-Head" If*

by Orifice P. Nozzle-Head

If more than three clocks in your house are hot glued to the center of busted airboat props.

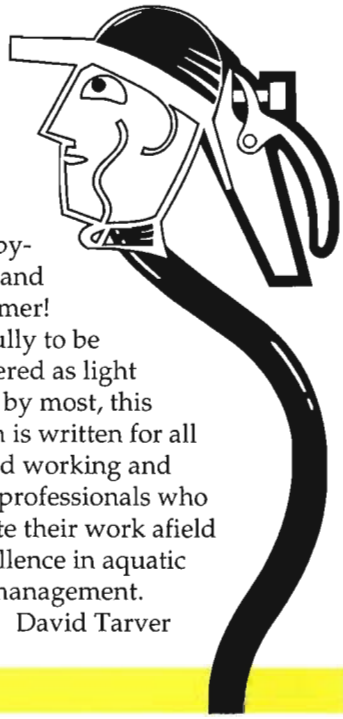
If when you pull into a gas station towing an airboat you automatically scream "64 miles per hour!" nine times before you get out to fill up.

If during the process of re-floating your sunken airboat bass fishermen are bitching about you removing all the good structure.

If you've ever had to explain that maintenance control has nothing to do with keeping your hand on the airboat stick.

If your method for determining hydrilla acreage consists of counting coots and dividing by the number of alligators.

If you refer to an unusually large hydrilla tuber as a "bull tuber" - YOU MIGHT BE A NOZZLE-HEAD.



*Copyright© and Disclaimer! Hopefully to be considered as light humor by most, this column is written for all the hard working and caring professionals who dedicate their work afield to excellence in aquatic plant management.

David Tarver

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The very popular laminated, aquatic "PLANT IDENTIFICATION CHART" is available again.

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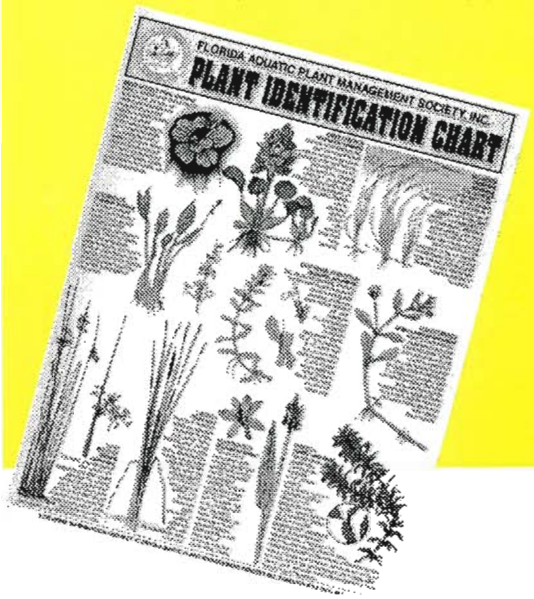

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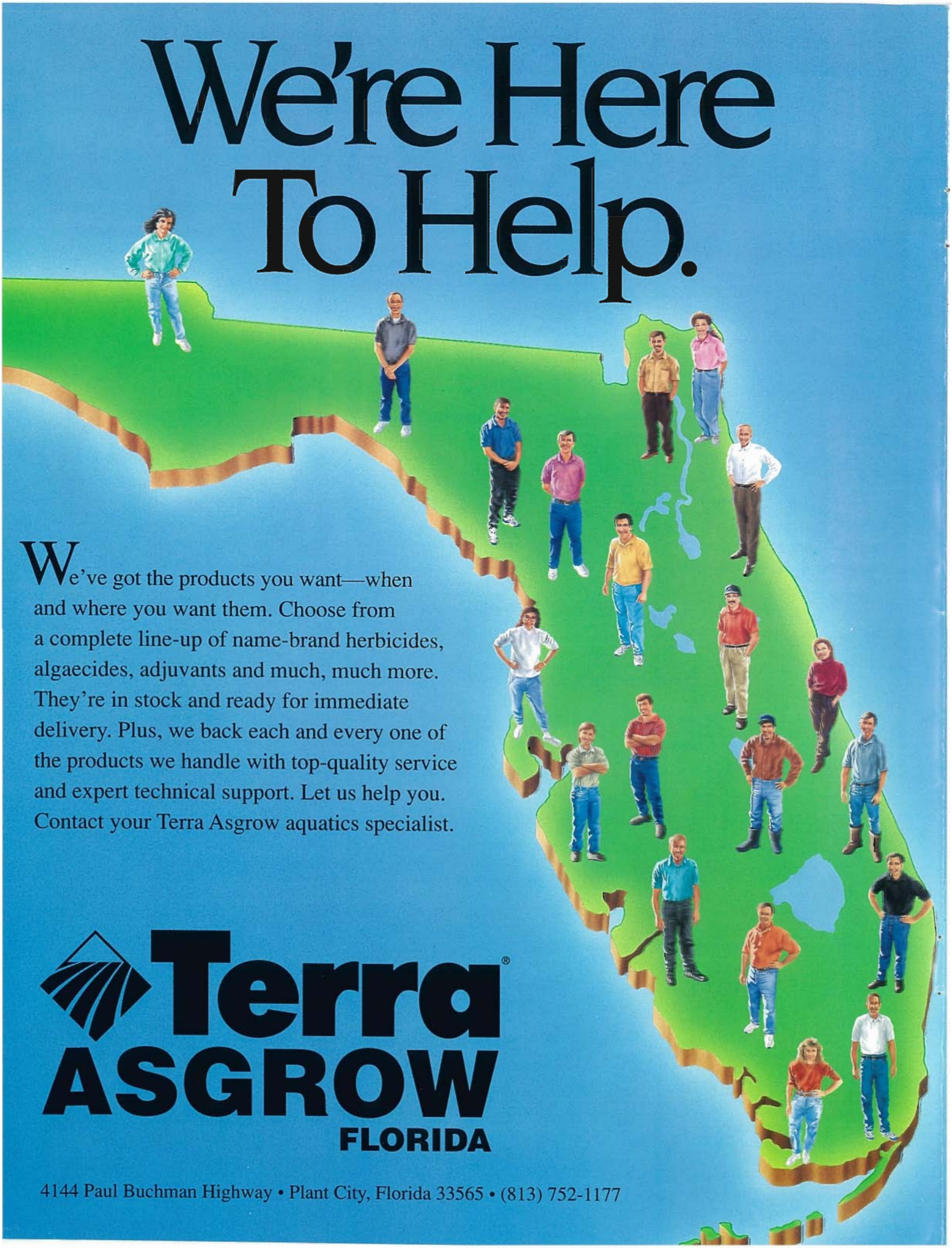

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AQUAVINE

ON THE MOVE

Adios **Jorge**

Jorge Cuarezma, formerly Technical and Marketing Mgr. For Monsanto Co. In south Florida, with whom many of us worked with the past several years, is moving to Houston Texas to work in Product Development with the Company. For the time being Jorge can be reached through the Monsanto headquarters in St. Louis (314/694-1000).

LaRue Robinson to be Water/ Environmental Team Leader

LaRue Robinson, a 14-year veteran of the Pinellas County Cooperative Extension Service, is moving to Las Vegas to become Water/Environmental Team Leader for the Southern Region of Nevada with the Nevada Cooperative Extension Service and University of Nevada - Reno. LaRue was know to many of us for presentations and publications on backyard ponds and aquascaping and the many aquatic plant management workshops that he conducted in Pinellas County. LaRue's Las Vegas telephone number will be published as soon as available so that we all have a place to stay when we're feeling lucky.

ELF ATOCHEM ANNOUNCES LABEL CHANGES TO ITS AQUATIC ALGICIDE AND HERBICIDE

Elf Atochem announced on July 12, 1996 the following EPA approved label changes for Hydrothol 191 Algicide and Herbicide liquid formulation:

- The skull and cross bones is deleted
- "Do not use where fish are an important resource" is deleted

- "Fish will be killed by dosages in excess of .3ppm" changed to: "fish may be killed by dosages in excess of .3ppm."

MEETINGS

Florida Aquatic Plant Management Society Annual Meeting, Sheriton Harbor Place Ft. Myers, Florida, October 8-10, 1996. Contact Don Doggett, President 941/694-2174.

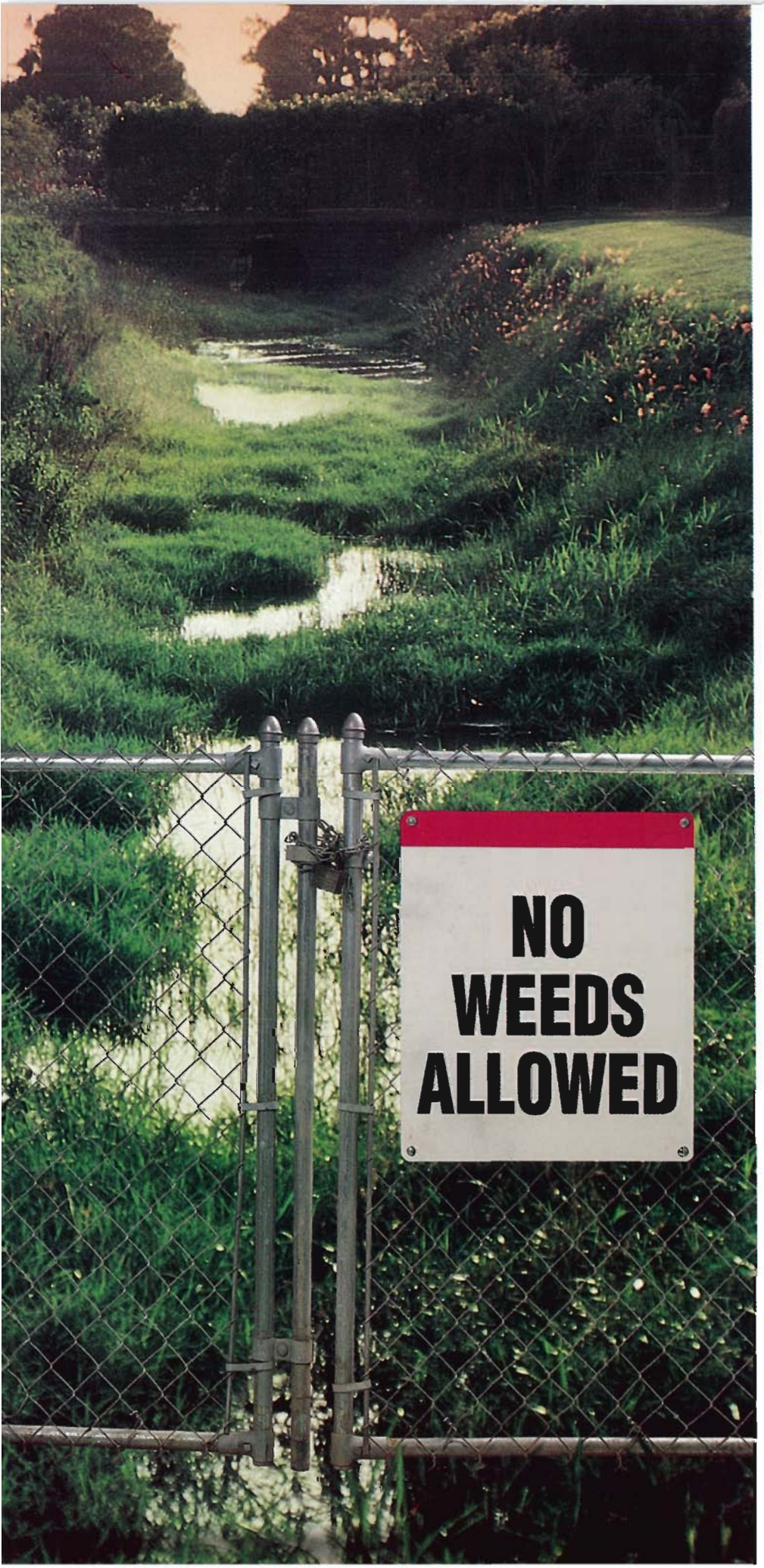
Midsouth Aquatic Plant Management Society Annual Meeting, GulfShores, Alabama, October 16-18, 1996. Contact Stan Cook 334/242-3883.

North American Lake Management Society 16th Annual International Symposium "People, Lakes, and Land," Minneapolis, Minnisota, November 13-16, 1996. Contact NALMS at 303/781-8287.

Southern Weed Science Society Annual Meeting, Houston, Texas, January 19-20, 1997.

Weed Science Society of America 1997 Annual Meeting, Orlando, FL, Clarion Hotel, February 2-6, 1997.

Florida Weed Science Society Annual Meeting, Orlando area, site TBA, February 27-28, 1997.



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