

# Sustainable Vegetation Management Practices

Chemical and mechanical means combine to control weeds.

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**D**uring recent years, Orange County has grown to become one of the most populated and urbanized communities in Central Florida. Rapid growth and development have also increased residents' expectations to include not only aesthetic maintenance of rights-of-way and public areas, but also the proactive management of vegetation on retention areas surrounding their properties.

The Orange County Roads and Drainage Division sprays 3,200 acres or 1,200 miles of rights-of-way, about 800 wet retention areas, which relates to about 1,400 acres; 70 miles of secondary ditches; and 100 miles of primary canals.

The division's spraying program has been in effect since 1989 and the main objectives include:

- Provide roadside safety by managing proper sight distance
- Reduce maintenance costs
- Eliminate vegetation within drainage conveyance systems
- Provide an aesthetically pleasing roadside to our citizens

To effectively manage vegetation, the division spray group utilizes various techniques to treat and minimize emergent, floating, and submersed aquatic and terrestrial vegetation growth in canals, ponds, and rights-of-way within unincorporated Orange County.

Currently, the spray section consists of 12 full time employees and technicians. In previous years, the operating budget for the section was about \$1.1 million, but due to use of better practices and biological methods, efficiency was improved and the operating budget was decreased to about \$900,000 per year.

In addition, the spray section has identified more than 120 miles of tertiary roadside ditches that receive routine applications that supplement mechanical cleaning by extending the period

between excavations to remove debris. The division also has 371 major drainage structures comprised of various pipe material and concrete box culverts that measure 30 in. or larger. The spray group makes specific site evaluations three to four times annually and treats each accordingly to keep them clear of vegetation and detritus.

Currently, three principal methods of vegetation management are used:

## Chemical Method

Treatments are applied with specialized equipment that allows a spray technician to treat the rights-of-way using chemical application with precision.

Initially rights-of-way spraying consisted of broadleaf weed control and the subsequent release of desirable turf grasses. After several spray cycles, bahia grass seed head suppression was introduced to extend the mowing cycle frequency up to 120 days in less visible, less traveled rural portions of the county, and covered 3,200 acres annually. With the advent of an increasing amount of rights-of-way now under routine contract mowing maintenance, the spray section is not applying selective broadleaf herbicide unless specifically requested otherwise by maintenance unit supervisors, contract section, and in concurrence with the spray foreman's objectives. The division currently utilizes two spray trucks with in cab controls dedicated to roadside maintenance, and makes two to three low volume broadcast applications annually.

Depending on access, treatment of canal and retention areas is handled with spray trucks, airboats, Marsh Masters, or Mules. For large canals with



*Solar-powered automated herbicide pellet distributors control floating vegetation within the 12 drainage basins located in Orange County.*



*The Marsh Master can carry several men plus equipment over land, water, marsh, and swamp.*

large open areas of access, the spray truck is preferred for treatment.

For limited canal or pond access, the equipment preferred is the Marsh Master (Coast Equipment, [www.marsh-master.com](http://www.marsh-master.com)), a light weight, high-flotation vehicle with pontoons located inside a rubber belt track system and outfitted with a spray skid. This unique equipment floats and moves on tracks through dense vegetated areas where other equipment would become stuck.

Large retention areas and canals are better accessed with the airboats. The airboat is versatile and is able to travel through canals and across large ponds much more efficiently than any other equipment for chemical treatment.

Another challenge we are faced with are new subdivisions with minimal easements. For tight and hard to reach areas, we have found the Kawasaki (www.kawasaki.com) Mule is a good choice. The off-road Mules are outfitted with a spray skid for ease of use, small area access, and functionality. The small access needed makes this a vital and necessary part of our spray equipment inventory.

Another one of our inventive ways of chemical treatment is with the use of automated pellet distributors. This technique allows pellets to be released by a time-released distributor into the primary canals within the 12 drainage basins located within Orange County. This method works well to eliminate floating vegetation within the conveyance areas and has proven successful in different locations throughout the county.

## Mechanical Method

Mechanical vegetation removal is also a vital process used to maintain nuisance vegetation. Mechanical means are used when vegetation can no longer be handled by chemical treatment. Many canals and retention areas need to have mechanical cleaning to allow proper stormwater storage and conveyance. Heavy equipment is scheduled as needed to clean and haul away large amounts of vegetation when it is reported and unmanageable by chemical means.

Different equipment is used to accomplish the removal of nuisance vegetation. The Menzi Muck (www.menzimuck.com) mobile all-purpose excava-

tor is a valuable and useful tool that is able to access tight, hard to reach areas where larger equipment is not feasible. This equipment can work from the bank or the bottom of a retention area or canal, thereby decreasing the amount of time removing unwanted vegetation.

Another means of mechanical cleaning is with a Caterpillar (www.cat.com) extended reach hydraulic excavator, which is used to move material quickly when access is not a problem.

## Biological Method

Biological treatment is another vegetation management method used. Orange County developed a program to release grass eating carp as a biological treatment on some retention areas. (See "Using Carp to Control Vegetation," *Government Engineering*, July/August 2005, pgs. 12-13.) This carp program enhances the ponds and minimizes the need for extensive chemical and mechanical methods.

Grass carp eat nuisance vegetation, enhancing the aesthetics of retention areas. Before releasing grass carp to specific retention areas, a permit must be obtained through the State of Florida Game and Fish Commission. A barrier device is installed to ensure the fish stay inside the permitted area and a local vendor is contacted and scheduled to release a determined amount of fish for each unique site. Currently, Orange County has released over 9,000 fish in over 300 ponds.

To meet resident expectations, Orange County Spray Section continues updating and enhancing provided services. Among others, the section continues reviewing additional areas for future grass carp releases to enhance the areas and minimize chemical usage. Another strategy is the usage of suppression treatments to the rights-of-way in our inventory to minimize the need for more frequent mowing. The section also continues modifying existing trucks to increase versatility and accuracy and to meet the conditions of urbanization.

Automatic distributors to treat invasive vegetation have been installed in the water column, allowing a margin of growth at the toe of the bank and preventing water flow from undermining the canal, helping to ensure all areas are properly maintained. Utilization of supplemental contracts to increase the spraying level of service is also under consideration. Our goal is to achieve better vegetation management by implementing a spray program to work in conjunction with mowing crews to remove brush and broadleaf weeds that inhibit grasses from becoming established along canal banks.

As technology improves and more stringent restrictions are placed on surface waters, Orange County will continue to research new ways to not only meet best management practices, but also better utilize public funding for our vegetation management program. **GE**

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**Menzi Muck mobile all-purpose excavators access tight areas where larger equipment dares not tread.**



**Off-road Mules from Kawasaki maneuver easily in tight, hard to reach areas in new subdivisions with minimal easements.**