

volatile esters—methyl, ethyl, isopropyl, butyl, etc.  
granular—salts or esters impregnated on granules or pellets of clay and other materials.

oil-soluble amines—tertiary fatty acid amines.

#### ABBREVIATIONS USED

gpa—gallons per acre

lb/A—pounds of active ingredient or acid equivalent per surface acre

ppmv—parts per million by volume. This final concentration of herbicide formulation in the treated body of water is usually expressed in gallons of formulation per million gallons of water (See calculations on page 8)

ppmw—parts per million by weight. This final concentration of herbicide in the treated body of water is usually expressed in pounds of active ingredient or acid equivalent per million pounds of water (See calculations on pages 8 and 9)

v/v—proportions by volume

psi—pressure in pounds per square inch

## Effects Of Erosion On Farm Lands & River Front Along The St. Johns River

By

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Presented to the HYACINTH CONTROL SOCIETY

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(1) Since 1900 I have lived near the St. Johns river, and since 1920 have lived on our farm on the banks of the St. Johns at Federal Point in Putnam County. To me the St. Johns river is the greatest river in the world. We have fished, boated, bathed and enjoyed the St. Johns for the past sixty-three years, and during this period have witnessed changes which are of real concern.

(2) During the '20s and '30s we sometimes felt that water hyacinth were a nuisance. During this period they lined the shores and protected the shoreline from serious erosion during many severe storms, however they also sometimes posed a problem to navigation.

(3) Along the shoreline Wax Mallows (wild Hibiscus) and many other wild flowers bloomed throughout the spring and summer. Also observed were Turk's Cap, Chinese Fan Palms, and many other flowers and ornamentals escaped from the Hart's Nursery, which was noted for its rare species of palms and other ornamental introductions, prior to and at the turn of the Century.

(4) Today the flowers and ornamentals which thrived along the shoreline are gone. Since the killing of the shoreline hyacinth, the erosion of the banks of the river varies from a few feet to a measured forty-five feet in one area. Washed out and fallen in many areas are the stately Cypress, and other trees which lined the shore. If we could give you a picture of the river front along the shores of the St. Johns river in years gone by as compared to today's shoreline, it would be one of past natural beauty to now one of a dismal nature. The overturned trees, the rotting logs and debris are appalling.

(5) While the shoreline hyacinth are gone there are many, many hyacinth in the drainage canals of the farms along the river. The freeze of December 12th and 13th, 1962 appeared to kill every hyacinth, however when Spring arrived, the hyacinth seed in the canals and small creeks came to life with vigor.

(6) On the farms of the Federal Point, Orange Mills and East Palatka area located on the river front, prior to 1940, the storms often drove hyacinth ashore and onto low lying

farm fields in September and October. These drifted hyacinth were plowed or disced into the soil and always during the growing season of December to April or May the greatest crop yields were experienced in these fall flooded areas. This of course, is true of all river bottom lands. The tilth, fertility and productivity of the St. Johns river border lands can in part be attributed to the hyacinth which added humus and some plant food to the soil.

(7) About 1940 farmers on low-land farms along the river began construction of canals for better drainage, and the spoil bank used to protect the fields from erosion and drifting debris. From our observations we are convinced that hyacinth are beneficial to especially sandy soils for their humus with little plant food value. They are also beneficial used as mulch in citrus groves and other fruit trees; however from the economical viewpoint we do not think farmers can afford the cost of handling hyacinth for these purposes with hand labor.

(8) Since hyacinth have been removed from the shoreline, a greater pest has come in and is taking over in the fertile lowland soils, namely the alligator weed. Unlike hyacinth which are easily killed by cultivation of the soil, the alligator weed appears to thrive during cultivation and mechanical equipment spreads and scatters the stolons throughout the fields. We observed alligator weed growing in potato fields along the river and found the weed roots so matted they were retarding the growth of the potato plants and definitely their production.

(9) As mentioned in the title of this paper we are principally concerned with the erosion of a farm river-front lands and the resulting destruction of river-front timber. We are not approaching this problem from a specialist's or scientist's viewpoint, we are giving our personal observations from our own experiences.

(10) It is our personal opinion that shoreline hyacinth are beneficial to Agriculture.



