

and circulation while improving water quality by aeration. Preliminary research results have indicated that power requirements of less than 0.6 hp per acre are sufficient for crawfish culture compared to 1.0 hp or more per acre for other species culture.

McAdams, S.D., H.C. Bounds, and J.A. Knesel. NLU. Application of aquatic plant-microbial filter technology for individual residence wastewater treatment.—The Louisiana Department of Health has initiated an investigation into the potential application of aquatic plant-microbial filter technology for individual residence wastewater treatment. As part of this study, two prototype systems installed in the Monroe area were monitored from August, 1988, to September, 1989. Measurements of effluent biochemical oxygen demand (BOD) and total suspended solids (TSS) showed one system consistently met EPA standards of 30 mg/l for both BOD and TSS while the other did not.

Perry, W. Guthrie, Jr. La. Dept of Wildlife and Fisheries. Experimental culture of *Penaeus vannamei* in southwest Louisiana.—*Penaeus vannamei* were cultured for 156 days (May–October) in 10 earthen ponds at Rockefeller Refuge, southwest Louisiana, 1988. Ponds were stocked with 8–10 day old post-larvae at densities of 6.1 and 24.7/m². Shrimp stocked at 6.1/m² had a mean growth rate of 1.05 mm/day and a mean yield of 688 kg/ha. Average size at harvest was 14.8 g (heads on) and the average feed conversion was 2.3. Stocking post-larvae at 24.7/m² produced a yield of 1,102 kg/ha of shrimp averaging 7.8 g. Mean feed conversion was 1.6 and growth averaged 0.9 mm/day. Hydrologic conditions experienced in the static ponds were characteristic of those of much of the surrounding southwest Louisiana marshes.

Perry, W. Guthrie, Jr. La. Dept of Wildlife and Fisheries. Observations on recreational use, Rockefeller Wildlife Refuge.—Rockefeller Refuge, a 31,000 ha coastal area, has been intensively developed for wildlife with emphasis on vegetative and salinity stabilization and marsh enhancement. Multi-use management is practiced when primary management objectives are not jeopardized. Beginning August 9, 1986, recorded daily car count data supported by aerial observation and creel data reveal annual utilization averages approximately 70,000 man days. Month of peak utilization was October 1989 with 5,204 vehicles and 2,500 boats. The weekends of October 10–11, 1987 and October 21–22, 1989 had the highest totals, 716 cars. Shrimping was most popular. In spite of public tampering with structures and littering, the recreational program adds another dimension to refuge management.

Perry, W. Guthrie, Jr. La. Dept of Wildlife and Fisheries. A pond culture experiment with red swamp crawfish stocked as the juveniles.—In November 1988, three 0.04 ha ponds were stocked with juvenile (8 nm) red swamp crawfish hatched in the Rockefeller Refuge laboratory. Stocking density was 8.6/m² in the ponds following an insecticide application to eradicate resident crawfish. After 190 days in the fed ponds, yield ranged from 127.8 to 206.3 kg/ha and survival ranged from 9.0 to 18.3%.

Rai, Gurbachan S., Mohindar S. Ogra, Rajinder S. Kakar and Fathalla L. Rehab. SU. Effect of sewage sludge on soil properties of calcareous and sandy soils, greenhouse study: I.—Whereas disposal of sewage sludge is an environmental problem nevertheless its organic matter is valuable mordant for certain soils. However, on application its heavy metal contents may be harmful to both plant and animal life. Greenhouse studies revealed that application of sludge, 10% to 70% by weight, to calcareous and sandy soils increased electrical conductivity, organic contents, total N, extractable P, Fe, Mn, Zn, Ni, and Cd progressively. Soil moisture and porosity increased but was more marked in calcareous soils. There was no change in pH value. Successive growing of summer and winter crops resulted in conditions very close to those observed in preapplication.

Tate, Twintillia M. and Wayne Flory. SU/BR. Acute toxicity of 2-thiothiazone (TTZ) in rats.—2-Thiothiazone (TTZ) is a thiourea derivative developed for use as a potential fertilizer. Acute toxicity testing has shown it to be an acute pulmonary toxicant in rats (Sprague Dawley). Results show that affected animals usually die within 2–3 hours. However, this toxicity was both age and sex dependent. Gross and histological examination of lung tissue of rats exposed to TTZ showed severe pulmonary edema, effusion and mottling of the lungs. Diethylmaleate (DEM) which is a glutathione depletor has been shown to potentiate the toxicity of TTZ in rats, suggesting that glutathione may play a role in the mechanism of toxicity of this compound.

Thompson, Joseph A. and Frederick A. Christian. SU. Chronic effects of sub-lethal levels of dalapon on the hatching success of *Pseudosuccinea columella* and *Fossaria cubensis*.—*P. columella* and *F. cubensis*, intermediate host snails of the sheep liver fluke, *Fasciola hepatica* are some of the non-target organisms frequently exposed to certain levels of herbicides in the aquatic ecosystem (Christian and Tate 1983). Dalapon, a herbicide, is known to undergo microbial degradation, yielding pyruvic acid. (Allison et al. 1983). Egg masses of the two genera of snails were exposed to dalapon (0–10 ppm), and hatching times were recorded. Young snails were allowed to undergo three successive generations in dalapon (0–10 ppm) and hatching times were again recorded. Results indicated that in the 3rd generation, both the number of snails hatching and time taken to hatch improved over the 1st generation.

PHYSICAL SCIENCES DIVISION

Chemistry Section

Aakhter, H., D. Chalasani, L. G. Butler, M. Jackisch, and F. K. Carledge. LSU-BR. A study of the effects of hazardous inorganic wastes on the solidification/stabilization of different types of cements using high-resolution MAS NMR spectroscopy.—The disposal of hazardous industrial wastes is a major concern of environmental scientists. Liquid hazardous waste disposal in landfills is usually allowed only after solidification/stabilization. In our present study various kinds of cementitious materials differing mainly in silicate and aluminate contents have been used to study the hydration reaction with and without the addition of some model inorganic wastes.

Dabipi, Jeneba, Ronnie Whitefield, Richard Echols, and Robert Miller. SU. Feasibility of using rice-hull charcoal as an adsorbent for environment contaminants.—Since rice hulls have a high percentage of silicon derivatives, the yield of carbon on charring can be varied from about 70% to less than 10%, depending on the preparation conditions. Rice-hull charcoal was prepared at