Land Application of Livestock Manure in Hawaii and the American Pacific


Management of livestock manures and effluent is a serious concern for livestock producers in Hawaii and the American Pacific. This project has been conducted from 2001 to 2005 to study land application of livestock waste (effluent and manure) and promote the development of comprehensive nutrient management plans (CNMPs) on livestock farms in the islands. Nutrient contents of animal manures, compost and effluents, P availability from manures, P runoff studies, and nutrient uptake by tropical grasses irrigated by effluent, have been previously reported. A series of 8 livestock producer workshop were held in December 2002, May 2003, July 2003, and May 2004 on the Islands of Oahu, Maui and Hawaii to extend project results. These were attended by over 100 participants representing all livestock industries. A final statewide presentation by the project on the soil and crop benefits of manures and effluents was held at the 2004 Hawaii Agriculture Conference in October 2004. Over 70 farm and community leaders attended these sessions, which have helped to open markets and build demand for composts and manures produced by Hawaii livestock industries. A series of four workshops on Animal Waste Management were held in Guam and CNMI (Saipan, Tinian and Rota) in summer 2004, with over 115 attending. An invited working session was held at the EPA Pacific Islands Environment Conference in June 2005 on Guam, attended by 40 Pacific Island participants. These workshops have raised awareness of issues and promising practices throughout the Pacific. Composting and dry litter systems are being implemented in Guam, CNMI, Palau and Pohnpei. The American Samoa EPA invited project personnel to consult in November 2005 to promote piggery waste management systems to reduce a serious outbreak of Leptospirosis.

Livestock operations in Hawaii were surveyed in 2001, which showed high water use, accumulation of effluent in earthen lagoons and limited land application of manures or effluents among livestock producers. Only 3 farms had CNMPs in 2001. A follow up producer survey was conducted in Hawaii in 2005. Highlights of this survey included: 12 producers had approved CNMPs; common management practices were composting, manure sales, effluent irrigation and reduced water use; industry concerns included high feed, fuel and transportation costs, and regulations; about 40 percent of previously interviewed producers had closed. Information and practices developed in this project will continue to be demonstrated in Hawaii and the American Pacific Island through a number of projects and extension programs.

Publications:

Impact:
Previous impact reports described the relevance of studies of animal waste composition, nutrient (especially P) retention on tropical soils, and nutrient removal by tropical forage grasses irrigated by effluents. These findings are very timely due to increasing recognition of the value of organic nutrient sources to agricultural, landscaping and nursery operations in Hawaii. Similarly, the livestock industries in Hawaii are beleaguered by increasing costs and regulations, so development of markets for former waste products provide a welcome income stream. Numerous poultry, dairy and swine operations are capitalizing on these opportunities, especially selling composts and manures. A large dairy on Oahu is establishing a 5 acre effluent irrigation enterprise for forage production, while several dairies on the island of Hawaii are irrigating pasture with effluent. These practices have been promoted by project activities and help to solve problems of both waste management and high feed costs. Project outreach activities to Pacific Islands will continue through a series of research projects and extension programs, primarily
funded by the USDA and USEPA. Tremendous benefits are anticipated in reduced ground and surface water contamination by nutrients and pathogens, particularly in smaller islands where waste management practices have been almost nonexistent. Of particular importance is control of the widespread disease Leptospirosis, which is often transmitted to humans by pigs. Practices promoted by this project will have a major impact on reducing this deadly disease.