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Class Specification
for the Class:

PLANT PATHOLOGIST

Duties Summary:

Independently studies the effects of various pathogenic organisms on agricultural weeds; conducts various laboratory tests and performs field work; and performs other related duties as assigned.

Distinguishing Characteristics:

This class reflects responsibility for independently studying the effects of various pathogenic organisms on plants for the purpose of controlling or eradicating agricultural weed pests. Plant pathogens considered are microscopic organisms and include fungi, viruses, bacteria and nematodes.

The work reflects the full range of professional responsibility which includes the entire process of identifying, receiving, screening, clearing, mass-producing, releasing and evaluating the effectiveness of plant pathogens. The work involves researching available literature on plant pathogens for potential use in Hawaii on plants which have been deemed to be noxious weeds by the Board of Agriculture; recommending that a permit for the local testing of the pathogen be requested from the U.S. Department of Agriculture; evaluating the plant pathogens received by conducting various tests to determine suitability; planning and conducting host specificity tests on target weeds, on closely related plants, and on plants important to Hawaii's agribusiness such as sugarcane, pineapple and papaya and evaluating the results of these tests; recommending pathogens for introduction; studying the life habits and host preferences of plant pathogens; developing mass breeding techniques and liberating into the field those pathogens which have been approved for release; and evaluating the effectiveness of pathogens through field recoveries.

The work involves the full range of investigation on cases ranging from simple to complex demonstrating the application of full professional knowledge in the field. Responsibility for the technical assessment of complex problems requires the adaptation or modification of methods and approaches. Consideration of the wide range of biological or environmental variables is also required particularly in view of the influences of rapidly changing socio-economic and environmental factors. While published scientific data on the interaction of these variables in other locales are usually available, assessments of pathogens not described elsewhere may also be required. The nature, scope and methodology of research and testing activities are performed independently under the general supervision of the State's Insectary Supervisor who

provides advice, when requested, on complex problems where no precedence exists and/or literature is limited and who may spot-check completed work for effectiveness of approach and accomplishments of broad program objectives. Recommendations for the importation of plant pathogens and laboratory testing in Hawaii are subject to review and approval by the Insectary Supervisor and higher level officials. Recommendations for the liberation of plant pathogens into the local environment are subject to review and recommendation by a panel of qualified experts. Positions in this class may supervise lower level professional assistants.

Examples of Duties:

Screens incoming shipments of plant pathogens; plans and conducts host specificity tests for newly introduced pathogenic organisms; performs laboratory procedures such as culturing, isolation and media preparation; evaluates results of host specificity tests and recommends suitability of pathogen for release; studies the habits and biology of pathogenic organisms; prepares progress or status reports on methodology and techniques developed for the propagation of each species; develops mass breeding techniques for beneficial pathogens; conducts research and develops methodology to improve mass breeding methods or to modify established methods; develops methods for and sees to the liberation of mass-produced beneficial pathogens in the field; determines whether beneficial pathogens will adapt to various environmental conditions such as elevation, topography, temperature and humidity and adjusts methods and approaches to special requirements of each situation; from knowledge obtained on the habits, behavior, life cycle, etc., of the pathogens and their hosts, evaluates the effectiveness of released species through field recoveries, ecological studies, reduced pest populations, and other significant data; prepares reports; when an infestation of a new agricultural pest is discovered, serves a team leader in determining the effect exerted by established beneficial pathogens; may supervise a few lower level professional assistants and/or technicians as assigned; and maintains contacts with international, national and local plant pathologists through meetings and correspondence.

Knowledge and Abilities Required:

Knowledge of: Principles and practices of plant pathology; plant pest and pathogen propagation techniques; field collection and pathogen release methods; techniques to vary developmental growth of plants; biology and ecology of pathogens, plants and other organisms and their interaction in the ecosystem; diseases of tropical plants and weeds; toxicological techniques; causal agents of diseases; principles of plant physiology; basic principles of identification and classification of plants; laboratory and greenhouse methods for the study of plant diseases.

Ability to: Diagnose and identify plant viruses, bacteria, fungi and nematodes; interpret relationships between pathogens and their host plants; select appropriate techniques for optimum results; adjust test procedures to meet changing conditions; prepare well-organized and comprehensive reports; analyze, evaluate and interpret data and draw sound conclusions; select, establish and maintain plants for host

specificity tests; incorporate concepts of plant growth regulators with plant breeding; use a microscope; establish and maintain effective relationships with cooperating agencies, the agricultural industry and the general public.

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