

The Economic Impact of the IR-4 Project and Programs: Executive Summary



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The IR-4 Project is a multi-agency-funded program, established in 1963 for facilitating the registration of existing pesticides for use on specialty crops. This report establishes the basis for estimating the economic contributions of the IR-4 Project. The basis used for estimates represent a sub-set of activities undertaken by the IR-4 Project, it's collaborating research institutions and industry participants, and associated collaborative efforts across domestic and international regulatory agencies. In this, not all sources of economic contribution are captured.

The primary function of the IR-4 Project is to coordinate research and field trials at Land Grant experiment stations across the country for developing data necessary for registering minor uses of existing pesticides. As such, the IR-4 Project fills the gap in minor use pesticide options, where registrants do not have sufficient market incentives to pursue registration, and where minor use growers have insufficient access to effective pest management resources. As the pesticide producer is ultimately responsible for registering their pesticides with the EPA, the IR-4 Project acts more as a liaison among agricultural producers, pesticide producers and regulators. Growers and grower organizations establish priorities, while the IR-4 Project works with pesticide producers to identify potential solutions, capitalizing on research efficiencies afforded by collaborations across university research and commercial pesticide manufacturers. Most of these registrations are for pesticides with relatively low toxicity, and address specific grower needs.

By facilitating minor uses of pesticide, the IR-4 Project improves the pest management options for growers, contributing similar productivity growth opportunities for specialty crops that are afforded to major program crops like wheat, corn and soybeans. There are three functional areas within the IR-4 Project for assisting in minor use registrations, including the Food Crops, the Ornamental Horticulture and the Biopesticides and Organic Support Programs. Each is able to focus resources to address specific needs within each functional area. In addition, the IR-4 Program facilitates international trade through the harmonization of international regulatory standards through the International Activities Programs, where the U.S. is a net exporter of agricultural commodities.

In addition to these efforts, the IR-Project engages in a number of other crosscutting efforts. These include efforts and the provision of resources for managing invasive species, such as participating on the USDA Interagency Task Force for Q-Biotype Whitefly. Effective management of invasive species can mitigate future pesticide use. In addition, the IR-4 Project regularly contributes to education and integrated pest management (IPM) support. IPM has been shown to reduce pesticide use through scouting for pests and delaying spraying until economically viable thresholds of pest pressure is reached in the fields, thereby affording pest management with fewer pesticides.

Of the program areas, the Food Crop Program is the largest source of impact and is the cornerstone of the IR-4 Project. However, other programs are increasingly important to agricultural producers and potentially vital for growers most impacted by the program. In the absence of the IR-4 Project, horticulture producers would have few resources by which to control pest pressures. Additionally, consumer interests in organic foods have given rise to increasing number of acres in organic agriculture. As this remains a small share of total acres in crop production, it is easy to understate the significance of this sector's growth. The Biopesticides and Organic Support Program is an essential resource among many participants building up this pest management sector.

We estimate the contribution of the IR-4 Project to economic outcomes based on the value of commodity production with pesticide uses made available through efforts of the IR-4 Project. In this, we

did not undertake an economic impact assessment that asserts the change in the economy should the IR-4 Project not exist, but rather estimated the share of economic activity that can be directly linked back to current and past IR-4 Project efforts. The distinction is subtle but results in what is called an economic contribution estimate rather than an economic impact assessment. Whereas an economic impact assessment requires making an estimate of the state of industry activities and the economy in the absence of the IR-4 Project, an economic contribution study only requires tracing those activities that exist because of the current and past efforts of the IR-4 Project.

According to USDA statistics, annual crop production sales, excluding horticulture, averaged \$194.2 billion over the past three years. In this report, the IR-4 Project is estimated to contribute \$6.3 billion to this production through the direct effects of the Food Crops, Ornamental Horticulture and Biopesticides & Organic Support Programs. This implies a hefty contribution to overall crop production accounting for just over three percent of total value of crop output. Given that specialty crops (a primary minor use of pesticides) make up about 40 percent of the value of crop output, this estimate is not implausible. However, while specialty crops are most associated with the minor use problem, the IR-4 Project's impacts span beyond specialty crop agriculture.

Based on standard I-O modeling, the estimated total effects of the IR-4 Project includes supporting an estimated 95,261 jobs with total labor income of \$5.6 billion and annual contributions to gross domestic product totaling about \$9.4 billion. These impacts represent best estimates of ongoing contributions to the U.S. economy, largely through crop agricultural productivity and damage mitigation via pest management. Relative to core federal funding of \$15.6 million dollars, this represents a high return to public investment. Such benefits arise through a long history of IR-4 Project-sponsored registration that has made up about 50 percent of EPA registrations for minor uses. Given these estimates and through tracking the IR-4 Project's roles in making minor uses of pesticides available to growers, we can conjecture that the estimated values are consistent with growers utilization of pesticides for minor uses and expected crop damage mitigation afforded those pesticides.