

XII.A.4. Ecological Economics for Evaluation of Agricultural Research : The Case of Soil Science Research in India

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This paper discusses the limitations of conventional methods used for evaluation and research decision-making. Externalities are not instances of market failure, but an integral part of the agricultural production system. Methods of impact assessment within the conventional neo-classical agricultural economics framework, do not consider externalities and the non-use values of the environment. If agricultural research is to serve the cause of sustainable development, impact assessment must inform the research manager about the research-technology-development goals spectrum. For impact assessment to demonstrate how research leads to development, the objectives and methods of impact assessment have to change. This entails a framework premised on social (not individual) preferences, attitudes and institutions, which allow the analyses to incorporate relevant non-economic variables from the valuation context. This paper is organized under four sections.

An ecological economics framework for the evaluation of agricultural research is discussed in section I. The paper, in section III, examines the significance of valuation context and nature of research project in evaluation of agricultural research, using the case of soil science (SS) research within the Indian National Agricultural Research System (NARS). The possible (types of) valuations are discussed in Section IV. These may range from norms valuation to (co-evolutionary) eco-development valuation, depending on the nature and extent of ecological disruption/ interference envisaged due to implementation. Participatory information generation and decisionmaking processes help in identifying appropriate valuations, defining system components and specifying system boundaries (spatial and temporal - time horizon being different for natural resource research compared to commodity research). Unlike impact of commodity research, which is estimated as economic surplus available due to the new technology or research expenditure, soil science research impact has to be assessed more carefully, incorporating both bio-physical and socio-economic data. The system specified, therefore, has to cover three tiers of mutually interacting sub-system, research, extension and use of gypsum technology. The time period is also to be specified for each sodicity context, contrary to a standard seven year lag length used for impact assessment in commodity research. Several production variables, institutional and organizational variables - quantitative and qualitative data - enter the analysis. Primary and secondary valuation indicators that are essential inputs in the research-manager's decision-making kit, are also drawn out.

The paper presents the ecological economics methodology used for assessing the impact of gypsum technology in Haryana State, in two contexts of strong and moderate sodicity. Some generic conclusions are presented in section V, about the use of ecological economics for evaluation of agricultural research. Some suggestions are made for the institutionalization of an ecological economics framework for research decision-making in the Indian NARS.