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**“A CONCEPTUAL MODEL OF OPTIMAL INVESTMENT IN THE
CONSERVATION OF GENETIC RESOURCES”**

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ABSTRACT

Genetic resources are the key raw material either for biotechnology or conventional crop improvement. They are particularly important for developing countries, many of which have a greater endowment of genetic resources than scientific capacity for leadership in biotechnology research. Thus for many developing countries, genetic resources may be the asset that enables them to participate in benefit sharing from biotechnology research partnerships. Consequently the conservation of agricultural genetic resources is widely perceived as important and many substantial recurring national and international investments are being made in genetic resources conservation. Even with current burdensome investment levels for many developing countries, though, not all agricultural genetic resources are being securely conserved and genetic erosion continues. This paper develops the framework for a model of optimal investment in the conservation of agricultural genetic resources. The model is developed to reflect the choices of a national decision maker to invest in genetic resources conservation of different crop species with a long history of domestication in the country. Such a national decision maker faces choices about which crop species to conserve, and how much to invest in the conservation of different crop species. Broadly speaking, the optimal investment in conservation of the genetic resources of a given species rises with the economic importance of the species, both in the country investing to conserve the genetic resources and the species' global economic importance. Genetic resources need to be seen not only as something with use value in the country of origin, but with an internationally recognized system of property rights in genetic resources, they may also be a source of export earnings and this increases with an increase in the economic importance of the crop globally as well as in the country of origin. Investment in genetic resources conservation for a species also depends on the amount of

indigenous genetic resources and the amount of foreign genetic resources. The greater the amount of unique indigenous genetic resources compared to the global total genetic diversity of the species, the greater the likely value of national genetic resources. Likewise, the greater the risk of genetic erosion in a species, the higher the optimal value of investment in conservation will be. Finally, the costs of conservation, whether in situ or ex situ, will vary by species, and the value of conservation has to be optimized subject to the costs of genetic resources conservation. This paper more fully develops the logic behind the variables included in the model and develops a framework to express the model.