

Title            A model of new industry development in horticulture  
Author         R.J. Collins  
Citation        ISHS Acta Horticulturae 694: 41-46. 2005  
Keywords      Punctuated equilibrium; new crops

#### Abstract

An important premise of new crops research in horticulture is that biologically successful new species can lead to successful new industries. Success in a biological sense is a necessary but insufficient condition because successful new crop industries are driven by economic and social factors as well as biological factors, and in practice these three sets of factors interact as a system. How to model any one of the biological, economic or social sub-systems is reasonably well understood, but modelling the dynamics of the whole system is more problematic. This paper presents a descriptive model that may be a first step towards understanding the many pathways that new horticultural industries follow, some towards success and others towards failure. The model adopts the view that the biological and environmental science of developing a new crop species must be considered in the context of new industries as emerging social systems with economic objectives. It argues that the multiple developmental pathways of a new industry reflect the principle of growth through discontinuous change, or punctuated equilibrium. The structure of the model is based around four linked phases, each described in terms of the activities of the actors within that phase. Punctuations of equilibrium can occur within or between phases, with either negative or positive consequences. In this way multiple pathways of development become possible. New crop examples drawn from horticulture are used to demonstrate the features of these various pathways in practice. With caution, it is concluded that the model could be used as a diagnostic tool to indicate future developmental pathways for a new horticultural industry, or to help identify approaches to intervening in a new industry's development to enhance the likelihood of its success.