Agents based crop health advisory system for farmers

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Abstract:

Despite their substantial efforts, small scale farmers in Kenya usually experience a number of challenges which include variable weather conditions, unreliable agricultural extension services, use of archaic technology, problems of pest and diseases, lack of information on the right type of farm inputs to use and the appropriate time of application of the same as well as soil nutrient deterioration. The challenges can be reduced through carrying out effective extension and advisory services. Although the common method of using agricultural extension officers in assisting these farmers is quite effective, it is very expensive and not sustainable. Application of ICT can significantly boost the extension work by reducing cost of collecting data, transmission, processing and dissemination of vital agricultural information to farmers. Unfortunately many ICT applications currently in use suffer from low adoption, difficulty in modifying, weak integration, complexity as well as failure to adapt to a continually changing environment within the crop health field. This has been resolved through the development of agents based crop health advisory system for farmers. Agents are sophisticated computer programs that act autonomously on behalf of their users, across open and distributed environments, to solve a growing number of complex problems. This system is using agents-based technology to provide advisory services to farmers in different areas that affect crop health which are nutrition, weather, crop failure, seeds, diseases and pests. The farmer will access the system through crop health advisory agent which will interact with nutrition agent, weather agent, crop failure agent, diseases/pests agent as well as seeds agent. The agents will exhibit autonomy, social ability, reactivity and pro-activeness in providing advisory services to the farmers. In order to successfully interact, agents will have the ability to cooperate, coordinate, and negotiate with each other. To make the system accessible to rural farmers, mobile phone interface will be used. It will also be possible to access the system through the internet.