Seminar Abstract

Unraveling the Economics of a Wicked (Weed) Problem

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An increasing number of weeds around the globe have become resistant to Roundup and other herbicides used on genetically engineered crops. Resistance develops via ecological selection following Darwin’s theories. If resistance spreads unabated, higher production costs and environmental damages will ensue when farmers turn to more expensive and environmentally disruptive controls. So private and public incentives exist to slow its advance. However, effective management of resistance defies a simple solution due to complex biophysical and socioeconomic interactions. In particular, when resistant weeds are mobile across farms, delaying resistance becomes a common pool resource (CPR) management challenge. Following individual profit maximization rules in such situations will exacerbate the problem as farmers ignore the external effects on their neighbors. It is in the collective long-term interest of all farmers to conserve an herbicide’s usefulness in their community. Three approaches can be used to address this CPR issue: (1) public regulation, (2) public and/or private incentive schemes, and (3) community-based (CB) programs. Technical and economic reasons suggest that the CB approach may be more cost effective. Elinor Ostrom, co-recipient of the 2009 Nobel Prize in Economics, documented the conditions under which CB approaches work best. Growers would participate in designing, financing, and implementing the resistance management programs, usually in collaboration with industry, government, and universities. Scholars and practitioners have developed effective governance mechanisms for many CPRs that could aid in developing effective weed resistance management programs. The seminar will explore the lessons from economic research and such applications of voluntary programs to address this wicked environmental management challenge.