WINTER 2013 SEMINAR SERIES


SPEAKER: Dr. Steve Shirtliffe

LOCATION: Room 1307-Thornbrough Bldg

TIME: 3:30 pm

DATE: January 16

ABSTRACT: It is widely recognized that agriculture forms the basis of civilization and that crop domestication was one of the pivotal developments in human history. Weeds are important in the evolution of domesticated plants, as most of our crops have evolved from wild plants with weedy characteristics, which some crops still possess. The un-conscious selection model of crop domestication postulates that the practices of sickle harvesting and re-planting seed of wild cereals in new areas rapidly selected for non-shattering and non-dormant crops. However, new archeological evidence suggests that early humans cultivated wild plants with weedy characteristics for 1000-2000 years before they evolved into fully domesticated crops. Cultivation of wild plants may be achieved by modifying the agronomy that is used. This is done in fully wild plants such as wild rice (Zizania sp.) and in partially domesticated crops such as canola (Brassica napus). Work in our lab indicates that canola is not fully domesticated and maintains several traits usually only occur in wild plants and weeds. Canola can be induced into secondary dormancy and form a persistent seed bank. Canola also is much more likely to disperse its seed prior to harvest than most other crops and requires special agronomic management in order to reduce its weediness. In contrast to canola, some weeds seem pre-adapted to cultivation. The weed cow cockle (Vaccaria hispanica) does not possess an effective self-dispersal method when grown as a crop. We have also determined that cow cockle genotypes differ in seed dormancy with some genotypes being almost completely non-dormant. Given these characteristics, cow cockle seems pre-adapted to domestication and has been domesticated as the crop Prairie Carnation. Although a large market has not developed, cow cockle seed yields approach those of modern domesticated crops. A model in which crop domestication is viewed as a continuum instead of discreetly may aid in our understanding of the role of “weedy” characteristics in the evolution of crops and weeds.
Biography: Dr Shirtliffe was raised on a grain and oilseed in Manitoba. After completing his BSc in Agronomy he returned home to farm for the next five years. Following this, he returned to the U of Manitoba where he received his PhD in 1999. Currently, he is a professor in the Department of Plant Sciences at the University of Saskatchewan where his responsibilities include teaching, research and extension in the area of crop agronomy. The central theme of his research is using agronomy to control weeds and understanding weedy traits in crops and weeds. Past and current projects have focused on the control of volunteer canola, oat agronomy, pulse crops and weed control in organic agriculture.