

## **Advisory & KT Tools and Processes to support potato farmers and agronomists to assess their exposure to risk of cadmium**

**Blair Elizabeth Ruffing**

### **ABSTRACT**

Cadmium (Cd) is a heavy metal found in soils all around the globe. This toxic metal accumulates in crops grown for consumption and is capable of causing harm to human health if consumed in high enough concentrations. There are several regions in Europe and across the globe with elevated levels of soil cadmium from a variety of sources, and the source of this cadmium determines the type of mitigation strategies needed to decrease levels of Cd in the soil. The source may be anthropogenic from use of phosphatic fertilizers or industrial contamination or geogenic from the weathering of soil and bedrock. There are maximum permitted levels of cadmium allowed in produce, as set by the European Union. Currently, there are discussions taking place in regard to lowering those maximum levels, making compliance a certain risk amongst growers in one of the most productive horticultural areas of Ireland. A mixture of methods was used to examine knowledge and attitudes of potato growers and agronomists in counties Meath, Dublin, and Kildare in Ireland where there are established elevated levels of available soil cadmium. The overall purpose of this study was to future proof the potato industry against this risk and provide insight into the effectiveness of advisory and knowledge transfer (KT) communication on farmer attitudes, knowledge, and intention to implement, particularly when dealing with an uncertain and unwelcome risk. Thirty-nine (39) growers and seven agronomists took part in one-on-one interviews and surveys regarding awareness of heavy metal contamination and intentions to mitigate. Themes from the interviews were established and analyzed in NVIVO, while quantitative statistical analysis was performed for the 39 grower surveys and seven agronomist surveys in SPSS. Qualitative analysis of the 39 one-on-one grower interviews and quantitative analysis of the 39 grower surveys revealed a very low level of awareness around the Irish cadmium issue but a high level of intention to mitigate. Qualitative analysis of the seven agronomists and quantitative analysis of the seven agronomist surveys revealed a very high level of awareness and concern in regard to the cadmium issue with a

low level of knowledge on possible mitigation strategies and low rate of advising clients with regard to same. This project has components dealing with themes of uncertainty, negative messages, and many others that are applicable to not only tillage but also dairy and drystock sectors. This research offers insights into understanding the best practice of communicating unpalatable messages to farmers in a way that allows them to see the best possible outcomes so that the message is at least somewhat welcomed, wanted, and accepted by the farmer.

