P-111 (23)
METALLIC TRACE ELEMENTS IN VEGETABLES: AN INVENTORY OF CADMIUM CONTAMINATION IN FRANCE

Christiane Raynal-Lacroix, Ctifl Centre Lanxade, 24130 PRIGONRIEUX, France;
raynal@ctifl.fr (Presenting author)

Among different contaminants in the food chain affecting consumer health, there are the metal trace elements. Cadmium (Cd) is one of the most toxic. It is the subject of a European regulation (UE n° 494/2011) and specific thresholds have been set for foods intended for infants and young children (UE n° 488/2014). Plants represent the main entry point of Cd contamination into the diet. Fruits and vegetables account for 21 to 27% in the Cd exposure of consumers (EAT2). In this context, and with a view to improving food safety, CTIFL carried out a national survey on two Cd-accumulating vegetables: salads and carrot. The survey is based on 73 plots of salads and 34 plots of carrot, distributed across the territory, and selected according to contrasted Cd levels (RMQS-INDIQUASOL data). The soil and vegetables of each plot were analysed. Cd levels in carrots and salads differ between regions, but are compliant with current regulations. Data analysis emphasises the lack of correlation between Cd levels in soils and in vegetables. Other factors than Cd concentration in the soil influence the level of vegetable contamination. In addition to the genetic effect, soil factors involved are: Percentage of clay and coarse sands for carrots and salads; Soil pH for carrots (the pH of carrot soils varies from 4.6 to 8.2 whereas that of salad soils has a narrower range: 6.2 to 7.4); The level of organic matter for salads; Certain mineral elements such as Ca and Fe for both vegetables, and also Zn, Mn and Cu for salads. Research is now focussed on assessing the bioavailability of Cd, Pb and Cu in soils through the development of DMG sensors (Diffusive MilliGels).

EAT2: French Total Diet Study (2011)

Keywords: Cd, national survey, salads, carrot, soil pH, organic matter, soil texture