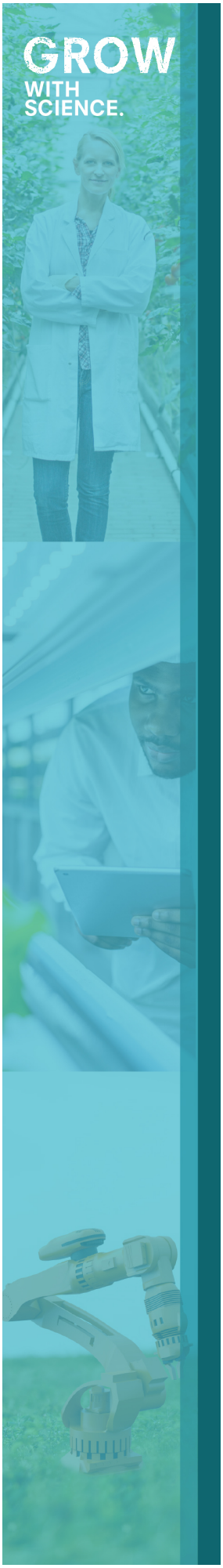

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Appendix X

Guidance for Soil Collection for Cadmium Analysis

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Agricultural soils often contain measurable amounts of cadmium (Cd); the main source of Cd in most agricultural soils is the parent material from which the soil has been formed. Since crop Cd uptake is closely related to soil Cd concentration it is important to know the soil Cd concentration of fields used to produce leafy greens. Soil Cd concentration should remain relatively constant over years, so once soil Cd concentration has been accurately determined by laboratory testing repeat testing should not be required for an extended period of time. The total soil Cd concentration of agricultural soils ranges from less than 0.2 parts per million (PPM) to more than 5 PPM. At the lower end of that range crop Cd uptake should present no problem for leafy greens production, but at higher soil Cd levels some remediation (e.g. high-rate zinc fertilization, liming or addition of organic matter) may be necessary before Cd accumulating crops such as spinach can be grown.

Since soil Cd concentration is mainly a function of the amount of Cd in the parent material, some general assumptions about soil Cd concentration can be made on the basis of geographic location or soil series. However, accurate determination of soil Cd concentration in any particular field requires collection of a representative soil sample, and analysis by a competent laboratory.

Soil sampling protocol

- Soil sampling should be conducted by experienced individuals using a soil probe, auger or shovel.
- Sample the soil in the most active root zone; for leafy greens such as spinach or lettuce this is the top foot of soil.
- Collect soil from a minimum of 10 locations within a field; if the field is more than 10 acres, collect at least one more sample for each two additional acres. Blend all the samples together to make one composite sample of the entire field. If the field contains several distinct soil types, collect and analyze a composite soil sample for each soil type.
- Thoroughly mix each composite sample and select about a quart volume of soil for submission to the laboratory.
- Keep records for each soil sample, including the date collected, ranch, block and other pertinent details so that you will be able to develop a data base of soil Cd concentration covering your farming operation.