Arsenic Soil Sampling

Results and Findings

Town of East Hampton

Natural Resources Department/Cornell Cooperative Extension

Fall 2016

Arsenic Background

- Arsenic (As) is a naturally occurring element and is present in soils and minerals
- Arsenic is more widely distributed due to human activities
- Was commonly used in pesticides, herbicides and insecticide products
- Arsenic-based pesticides were used extensively to control agricultural pests on farmland on Long Island until the late 1960s
- Heavy metals such as arsenic tend to bind tightly to soil, most often in the surface layer
- They are persistent in the environment and thus may be present in the soil long after they have been applied

Study Area

- East End Community Organic (EECO) Farm
- Non-profit
- Leases gardens to individuals to grow organic crops
- 42 acres of town-owned farmland in East Hampton
- Formerly used for potato farming
- Historically tested by the town for arsenic concentrations in soil

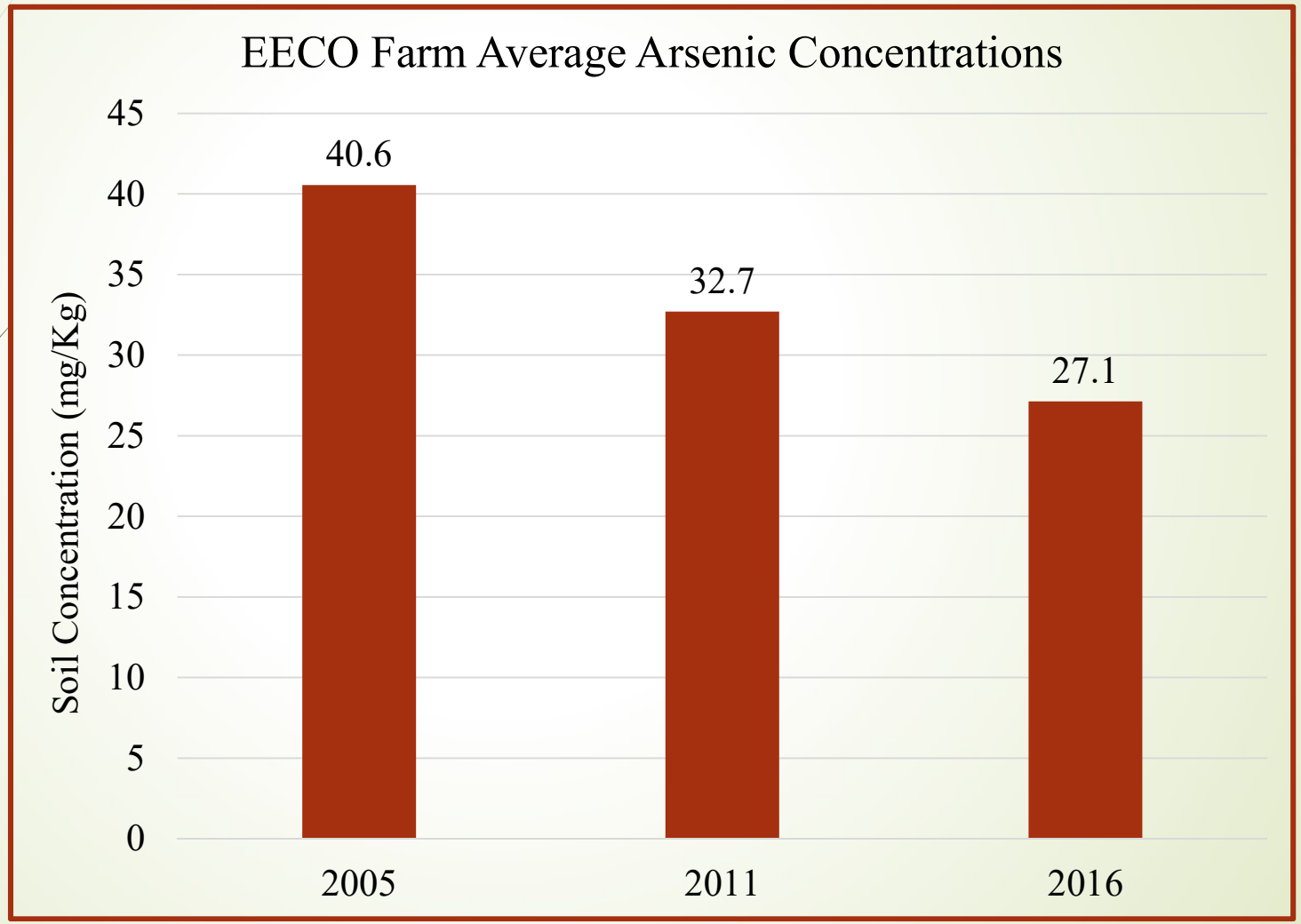
2016 ARSENIC SAMPLING LOCATIONS

- Site Location: EECO-FARM; 55 Long Lane, East Hampton
- Samples Collected on 10/12/16 by American Analytical Laboratories
  - 12 Soil Samples
  - 2 Vegetable Samples

Arsenic Results October 2016

Soil samples ranged from 10.6 to 33.1 mg/Kg
Vegetables samples had non-detectable levels

Historical Comparison



Cornell Cooperative Extension of Suffolk County

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Background Levels

- New York State Background Levels range 7 to 40 mg/Kg
- Arsenic concentrations found at the EECO farm are consistent with levels found by *Sanok et. al., 1995* study of 10 potato fields in Suffolk County, Long Island
  - Arsenic ranged from 27.8 to 51.0 mg/Kg in agricultural land
  - Non-agricultural soils in Eastern Long Island was lower (average of 2.26 mg/Kg)

Arsenic in vegetables

- Concentrations in crop plants grown in arsenic enriched soils are typically too low to cause any health effects
  - All soils and food crops contain detectable levels of arsenic
  - High levels of arsenic accumulation in the crop plant would have adverse effect on plant growth
  - McBride et al., 2015 – As long as the soils tested contained less than 50 mg/kg of arsenic, the vegetables grown in them (carrots, lettuce, green beans and tomatoes) contained levels well below EU guideline values
  - Vegetable samples collected from EECO farm had levels of arsenic below EU guideline values

Exposure and Health Concerns

- Exposure through;
  - Directly ingesting soil
  - Inhalation of dust
  - Eating unwashed/unpeeled vegetables
- Soil arsenic levels at EECO farm do not pose an immediate health hazard (NYSDOH)
- Reasonable public health goal is to limit exposure
  - NYSDOH applauds EECO farm for taking appropriate actions
  - Inform farm registrants that arsenic is present in the soil and posted informational signs
  - Reduce exposure while gardening (wearing gloves and appropriate clothing, avoid soil ingestion, avoid breathing soil/dust that becomes airborne)
  - Established turf cover in non-garden areas to minimize exposure
  - Educates students on gardening practices and directed to wear gloves

Best Gardening Practices

- Wear gloves while gardening
- Thoroughly wash hands and garden tools after gardening
- Thoroughly wash/peel garden crops before consuming to remove any excess soil particles
- Keep soil moist while gardening to control dust and prevent inhalation of soil particles
- Introduce clean topsoil – raised beds
- Mulch and cover crop to keep the soil covered to reduce erosion and control dust
- Provide educational materials on arsenic and BMPs