## Soil salinity – Long term effect of tile drainage over 17 year period in eastern ND

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Grower interest in tile drainage increased in eastern ND as we experienced many wet years starting in 1992.  Grady Thorsgard, a local farmer was one of the first to install tile drainage on one of his fields. Grady allowed AGVISE to establish 10 sites to monitor the salinity each year to 24".  Starting in 2002 and ending in 2019, AGVISE tested the salinity each fall on 10 sites.  Two of the sites had high salinity (e.c.) initially.  Over the next 17 years, the salinity in these two sites decreased to a level that did not cause damage to any crop in his rotation (corn, soybeans, drybeans and sunflowers).

While the salinity did decrease in the two sites, the process took 17 years.  In dry years the salinity (e.c.) levels actually increased.  The soil in this study was a sandy loam to a loam. Reducing salinity in fine textured soils will take longer. The key to reducing salinity with tile drainage is having enough precipitation in early spring and late fall when crop water use is low, to leach the salts lower in the soil profile.  If tile drainage is not possible, growing plants to increase water use and lower the water table will also reduce topsoil salinity over time.


## Managing Soil Salinity with Variable Field Management and Forages

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Soil salinity remains the primary factor in defining marginal soils in western Canadian agriculture. Natural soil water fluctuations have always caused salinity, but this has been exacerbated by encroachment of annual cropping on saline land. Farmers have adopted variable rate management for fertilizer application yet have often stepped back from variable farm management of cultivated acres. A result is often spread of salinity, and lost income on significant acres. Addition of forages on all farms is a good step to manage soil water and improve farm income