

# PHYTOREMEDIATION OF BRINE CONTAMINATED SOIL (2005)



## RESEARCH COOPERATORS

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## TRIAL OBJECTIVE

To determine the effect of humic substances (Black Earth Mini Granule) on salinity (soluble sodium, Na) and sodicity (exchangeable sodium, Na) of brine contaminated soil grown with vegetations.

## CERTIFICATIONS

Black Earth Humic products are:

- » Listed by OMRI
- » Registered with CFIA
- » Certified for use for NOP
- » Certified by the CDFA



## EXPERIMENT – SOIL CHARACTERISTICS

Type:	Black Chernozem/Oxbow Assoc
Origin:	Cannington Manor, Saskatchewan
Texture:	Silty clay loam
Contamination:	Brine spill in 1960
pH:	7.80
Electrical Conductivity (ds/m):	14.81
Soluble Na (cmol/kg):	18.72
Exchangeable Na (cmol/kg):	6.16

## EXPERIMENT – TREATMENTS

Vegetation:	Suaeda calceoliformis (paiute weed) + distichlis spicata (inland salt grass)
Soil Amendment:	Gypsum (CaSO <sub>4</sub> , 2H <sub>2</sub> O) Calcium nitrate (Ca (NO <sub>3</sub> ) <sub>2</sub> ) Black Earth
Application Rate:	Gypsum = 50.0 ton/ha Black Earth = 0.2 ton/ha Gypsum + calcium nitrate + Black Earth = 49.4 + 0.5 + 0.2 ton/ha
Period:	Seeding to 90 days

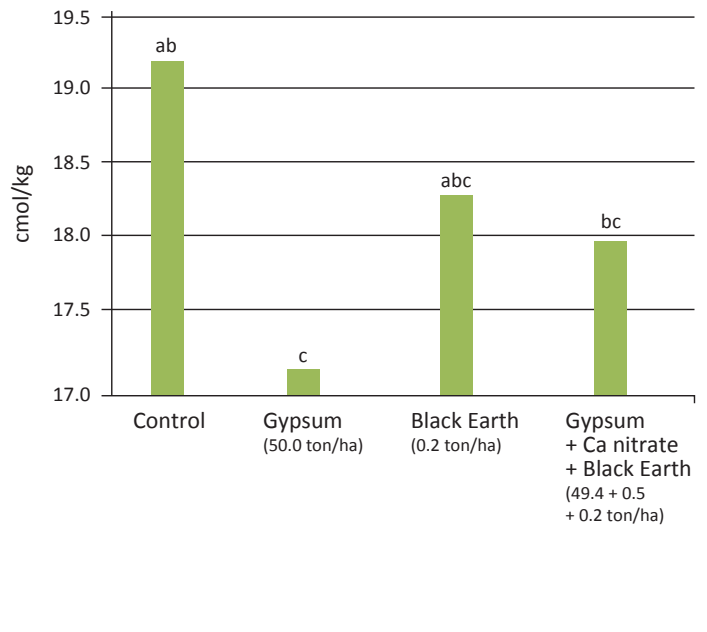
## TREATMENT & ANALYSES

Tested soil was mixed with potting soil at 2:1 ratio and planted with seedlings. Soil amendments were gypsum, calcium nitrate, and Black Earth. Combined *suaeda calceoliformis* (paiute weed) and *distichlis spicata* (inland salt grass) seedlings were planted in growth chamber for 90 days until harvest. Earth treatment was repeated three (3) times and replicated two (2) times in time. ANOVA analyses ( $P \leq 0.05$ ) were performed.

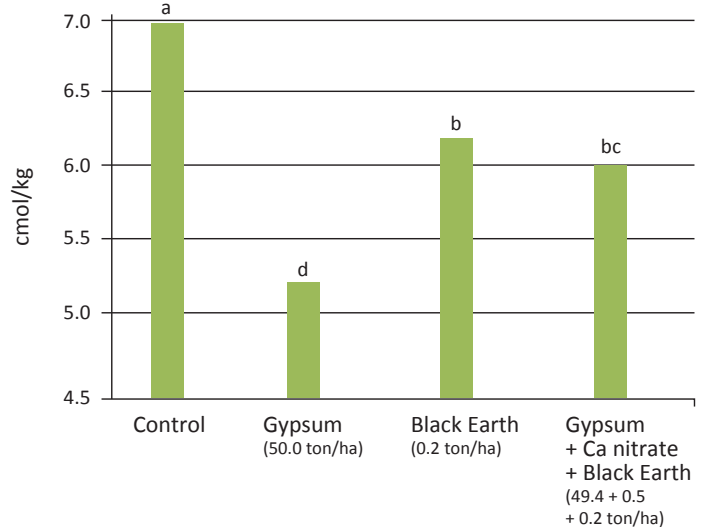
## RESULTS

All soil amendments reduced both soluble and exchangeable sodium (Na) values in soil significantly through leaching and vegetative absorption. Values with different letters are significantly different at  $P \leq 0.05$ . Gypsum at 50.0 ton/ha performed the best. Black Earth at a much lower rate (0.2 ton/ha) also performed well. Its performance could be improved by combining gypsum, calcium nitrate, and Black Earth at 49.4, 0.5, and 0.2 ton/ha, respectively.

**Soluble Na vs. Soil Amendment**  
(90 days treatment)



**Exchangeable Na vs. Soil Amendment**  
(90 days treatment)



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