Table 4.--Yields of White Rose potatoes in salinized soil plots

P.p.m. salt in irrigation water	EC_e of saturated soil extracts 1/2 - 16 in.	Yield of tubers: Total yield: lbs./A.	Total yield: % of control	U.S. #1: lbs./A.	U.S. #1: % of control	Av. wt. of tubers: grams	Av. wt. of tubers: % of control
0	0.85	35,000	100	32,750	100	157.8	100
2000	3.37	28,100	80.4	25,900	79.1	140.8	89.2
4000	4.85	22,700	65.0	21,000	64.3	128.6	81.5
6000	6.46	16,700	47.7	13,800	42.1	96.0	60.8

is 6.2 millimhos/cm., a value much higher than was anticipated. It should be emphasized, however, that frequent irrigation reduced the moisture stress and that the index for salt tolerance of potato reported here is valid only for comparable cultural conditions.

Salt tolerance of sweet corn

Plants of Golden Cross Bantam, T-strain, were started in the greenhouse on March 29. Seedlings were thinned to three per hill, hills being spaced [illegible] feet apart in beds 33 inches apart on center. Salinization was initiated [illegible]pril 7, and increased stepwise until 0, 2,500, 5,000, and 7,500 p.p.m. salt were being added to the irrigation waters. Plots were irrigated about every 10 days, receiving 1 inch of water per irrigation during the first month of growth and 2 inches thereafter.

The plants in the control plot began to silk on June 4. Records were kept of silking dates and the point at which 50% of ears in each treatment silked (average silking date) was determined. Each increment of salinity in the four treatments delayed the average silking date by 1.5 days. Since salinity has been frequently observed to hasten flowering in other crops, this observation is of some interest.

Ears were harvested between June 21 and July 4, the average interim between silking and picking being 18-19 days. Weights of individual ears (unhusked) were recorded and yield data are summarized in table 5. Except for the highest salt level, decreases in yield are caused entirely by decreases in numbers of ears, since ear weight remains unaffected. In this respect, too, corn differs from other crops.

The relative yields of stover closely parallel yields of ears.

The EC_e of saturated soil extracts associated with 50% reduction in yield is 5.7.

Salinity did not appear to affect the quality of corn in any way.

While plants showed frequent signs of moisture stress, especially in the high salt plots, no specific symptoms of salt toxicity were manifested. During a period of strong, warm, northerly winds, some of the plants on the north side of the high salt plot died, indicating the close relationship between such environmental factors and apparent salt tolerance.

Table 5.--The yield of Golden Cross Bantam sweet corn in salinized soil plots

P.p.m. salt in irrigation water	EC_e* of saturated soil extracts mmhos/cm.	Yield of ears		Ave. wt. of ears in grams	Wt. dried stover as percent of control
		Ton/acre	% of control		
0	1.07	9.34	100	175	100
2500	3.61	6.99	74.9	177	77.3
5000	5.43	6.05	64.8	174	67.1
7500	5.97	3.94	42.2	158	48.2

* Average of EC_e in beds 8 - 24" and in furrows 1/2 - 24".

Mineral Composition, Osmotic Pressure, and Salinity

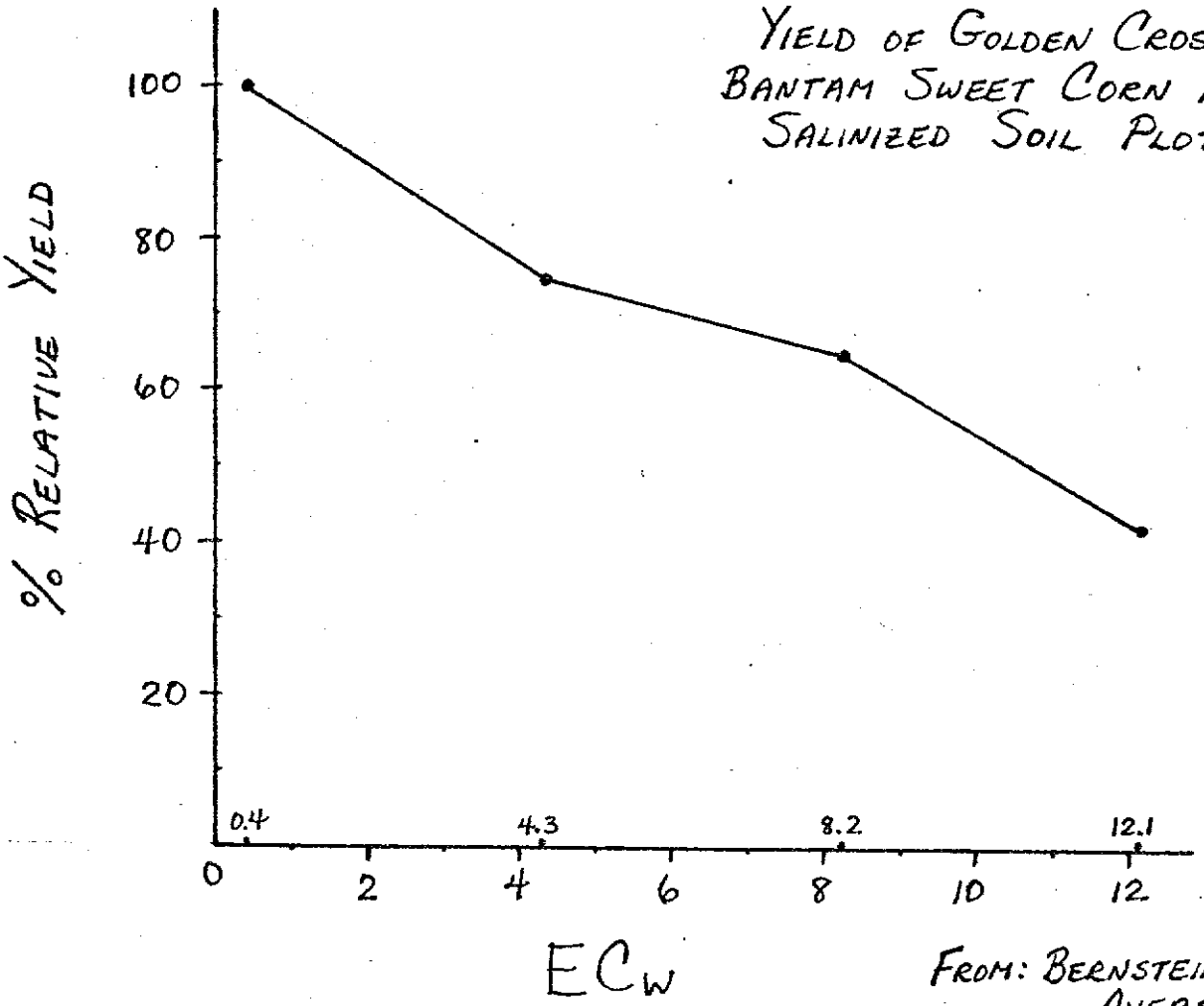
Data on the osmotic pressure of plant saps and the mineral composition of plant parts are being obtained in connection with these investigations on the salt tolerance of truck crops. Some of these results are summarized in table 6. Crops are arranged in order of increasing salt tolerance as defined by conductivity of soil extracts associated with 50 percent reduction in yield. While there appears to be some relationship between osmotic pressure of leaf saps and salt tolerance, exceptions to this relationship are obvious. The cucurbits (see cantaloupe) possess fair salt tolerance, but all of the cucurbits tested have very low osmotic pressures. Tomato, with the highest salt tolerance of this group of crops does not develop as high an osmotic pressure under saline conditions as most of the other crops.

Table 6.--Composition of leaves of some truck crops and salt tolerance

Crop	EC_e per 50% 1/	Osmotic pressure of leaf sap, atm.		Cl, m.e./gm. dry wt.		Na, m.e./gm. dry wt.	
		Control	at EC_e=5 2/	Control	at EC_e=5 2/	Control	at EC_e=5 2/
Bean	3.3	7.6	9.8	0.17	1.39	0.01	0.02
Canta-loupe	4.4	5.2	6.4	0.36	0.85	—	—
Corn	5.7	10.3	11.8	0.09	0.20	0.01	0.01
Potato	6.2	10.3	12.0	—	—	—	—
Cabbage	6.7	—	—	0.84	1.52	0.26	0.46
Broccoli	8.8	11.5	13.2	0.90	1.56	0.38	0.56
Tomato	9.3	11.5	10.0	0.52	0.91	0.07	0.20

1/ EC_e of saturated soil extracts associated with 50% reduction in yield. For soil depths sampled, etc. see reports on individual crops above and in Report to Collaborators, 1942.

2/ Values of O.P., Cl, and Na associated with conductivity of soil extracts of 5 millimhos/cm.



Yield of Golden Cross Bantam Sweet Corn in Salinized Soil Plots

From: Bernstein & Ayers (1949) U.S.S.L. - Collab. Report

Graph by R.S. Caylor