Mayland, H. F. 1968.

Measuring and Interpreting Rangeland Soil Fertility. Agronomy Abstracts p. 137.

Fertility (FI) and a potential yield increase (PI) indexes were determined for 119 semiarid rangeland soils of southeartern Oregon. Four hundred-gram portions of the < 2 mm soil, representing 0 to 75, 75 to 150, or 150 to 300 mm depths, were placed in 400-cm^3 waxed cartons, seeded with 100 'Bonneville' barley (*Hordeum vulgare* L.) seeds and watered (–NS) daily to 0.3 atmosphere moisture tension. A second group was handled identically except that 50 ml of complete nutrient solution (+NS) was applied at 10-day intervals. Top growth was harvested at 40 days, dried at 100 C and the mean yield of three replications determined. The fertility index was computed as FI = (–NS yield)/ (+NS yield) and the potential yield increase index as PI = 100 [(+NS yield) – (–NS yield)]/ (–NS yield). Percentage occupancy (PO) of *Agropyron desertorum* was assumed to be a measure of reseeding success at the sites represented by the soils. PO was not related to FI, but was positively correlated with PI for each of the three soil depths. It is concluded from this relationship that fertilization response would be greatest on the more successfully reseeded sites.