Root Growth in Alternative Crops Experiment 1995-1997

Research Results

Root Growth in Alternative Crops Experiment

* Root growth of 7 crops (safflower, sunflower, crambe, canola, soybean, dry pea, and dry pea) was measured in the Alternative Crops Experiment during the years 1995-1997. Root growth of spring wheat was also measured.

* The Alternative Crops Experiment was the predecessor of our Crop Sequence Experiment, which is the basis of this Crop Sequence Calculator.

* Root growth of crops was measured with a minirhizotron-microvideo system

* The crops were grown in spring wheat - winter wheat - alternative crop rotations.

Minirhizotrons

Fig. A. Minirhizotrons used for root growth measurements. Minirhizotrons were installed in soil at an angle of 30 deg. With respect to vertical.

Left of picture: 2-meter pressurized-wall minirhizotron

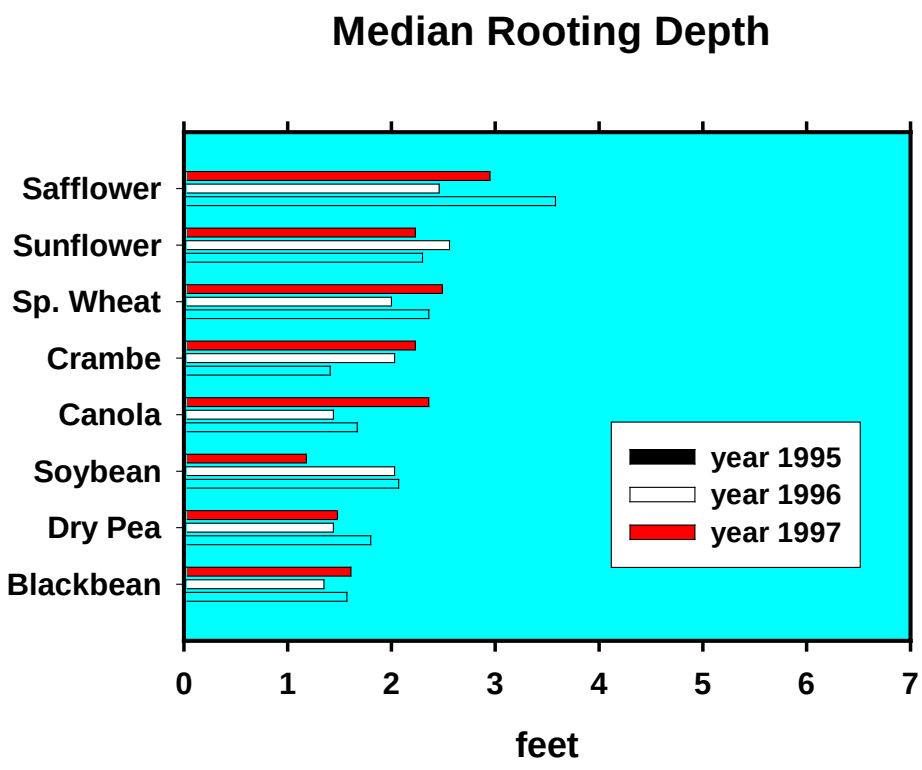
Center: 2-m standard minirhizotron

Right: 3-m pressurized-wall minirhizotron

Microvideo Camera

Fig. B. Showing microvideo camera used for imaging and measuring actual root length growth.

Rooting Depths



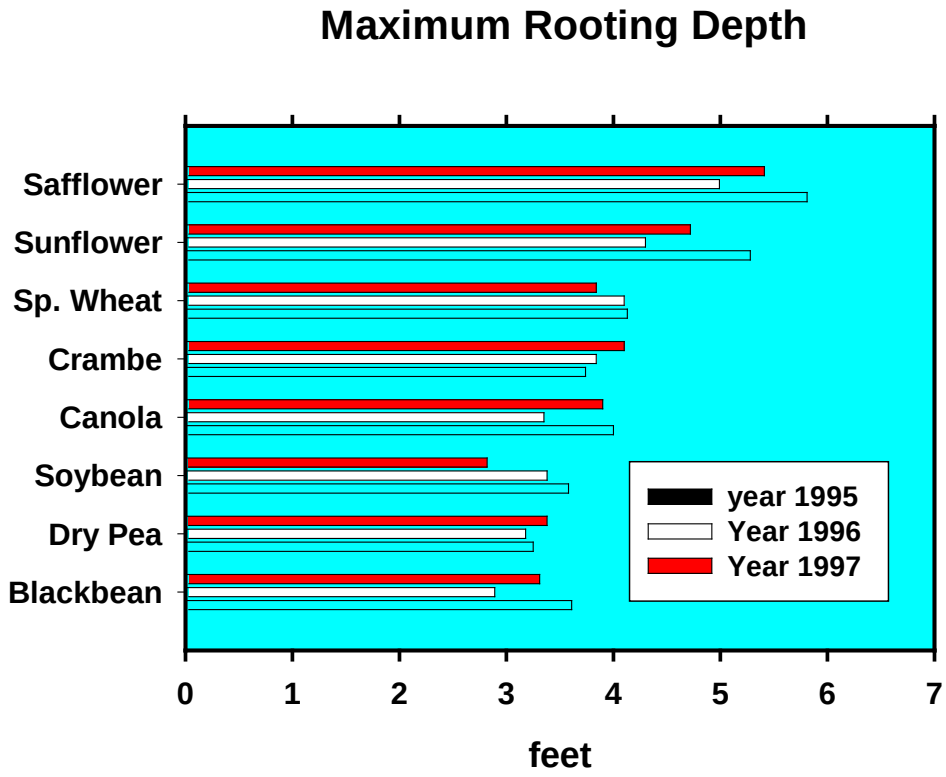


Fig. C. Maximum and median depths of root length growth measured with minirhizotron technology in Phase I Alternate Crops Experiment, 1995-1997. Median depth is that at which half of root length growth is above, half below.

Root Length Growth

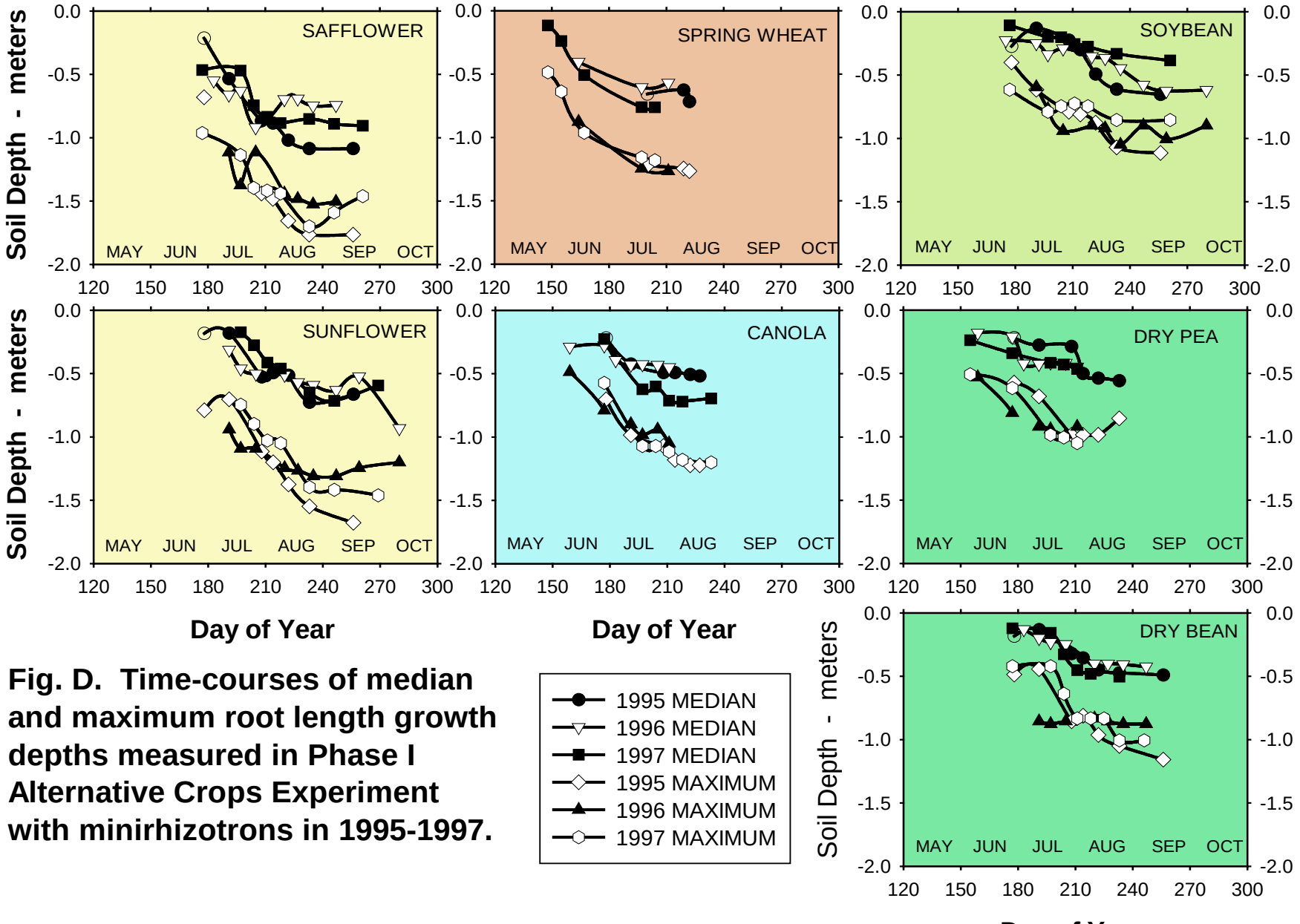


Fig. D. Time-courses of median and maximum root length growth depths measured in Phase I Alternative Crops Experiment with minirhizotrons in 1995-1997.

Total Root Length

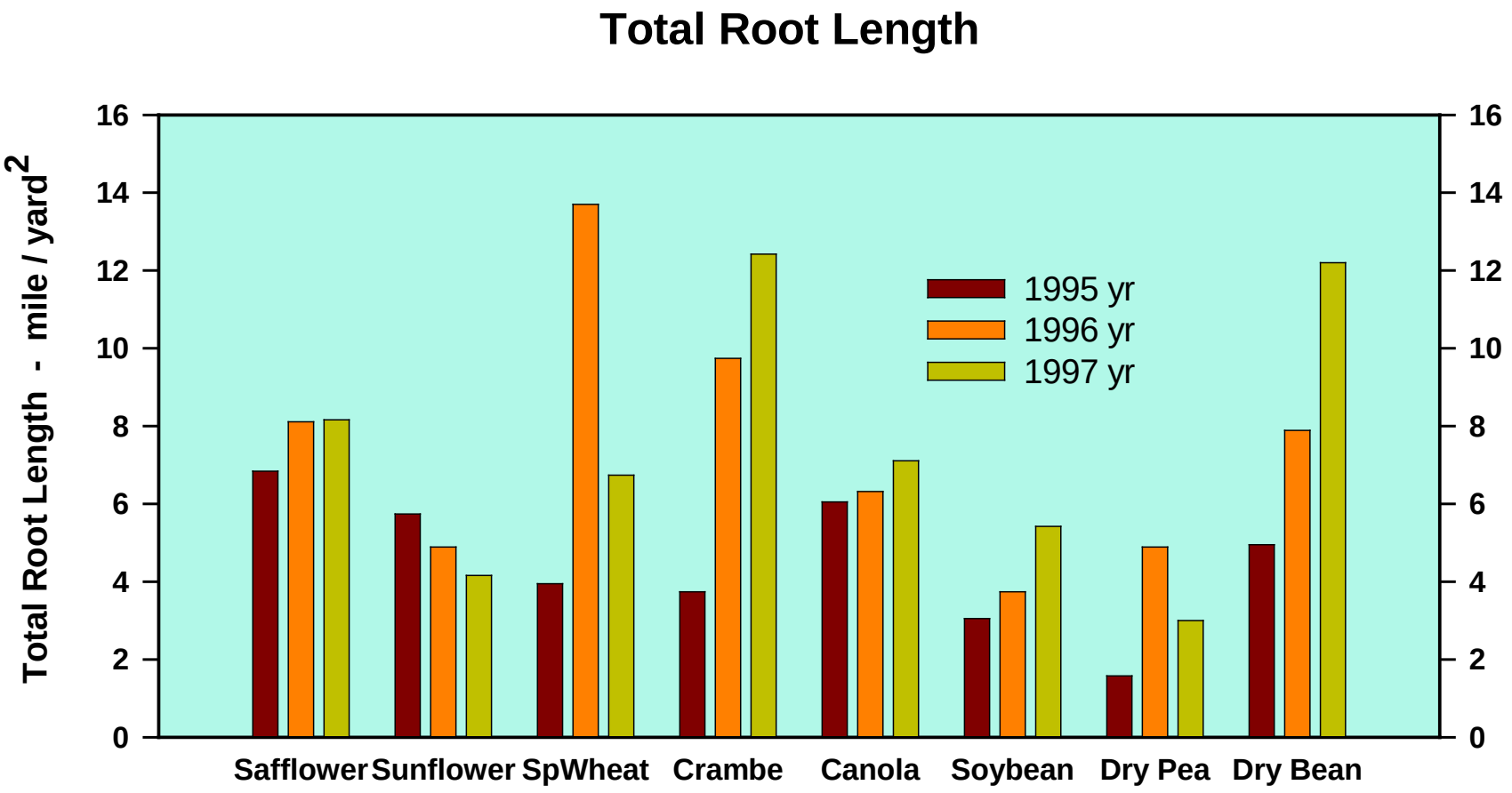


Fig. E. Total root length averaged over 3 dates of near-maximum root growth using minirhizotron technology. For Phase I Alternative Crops Experiment.

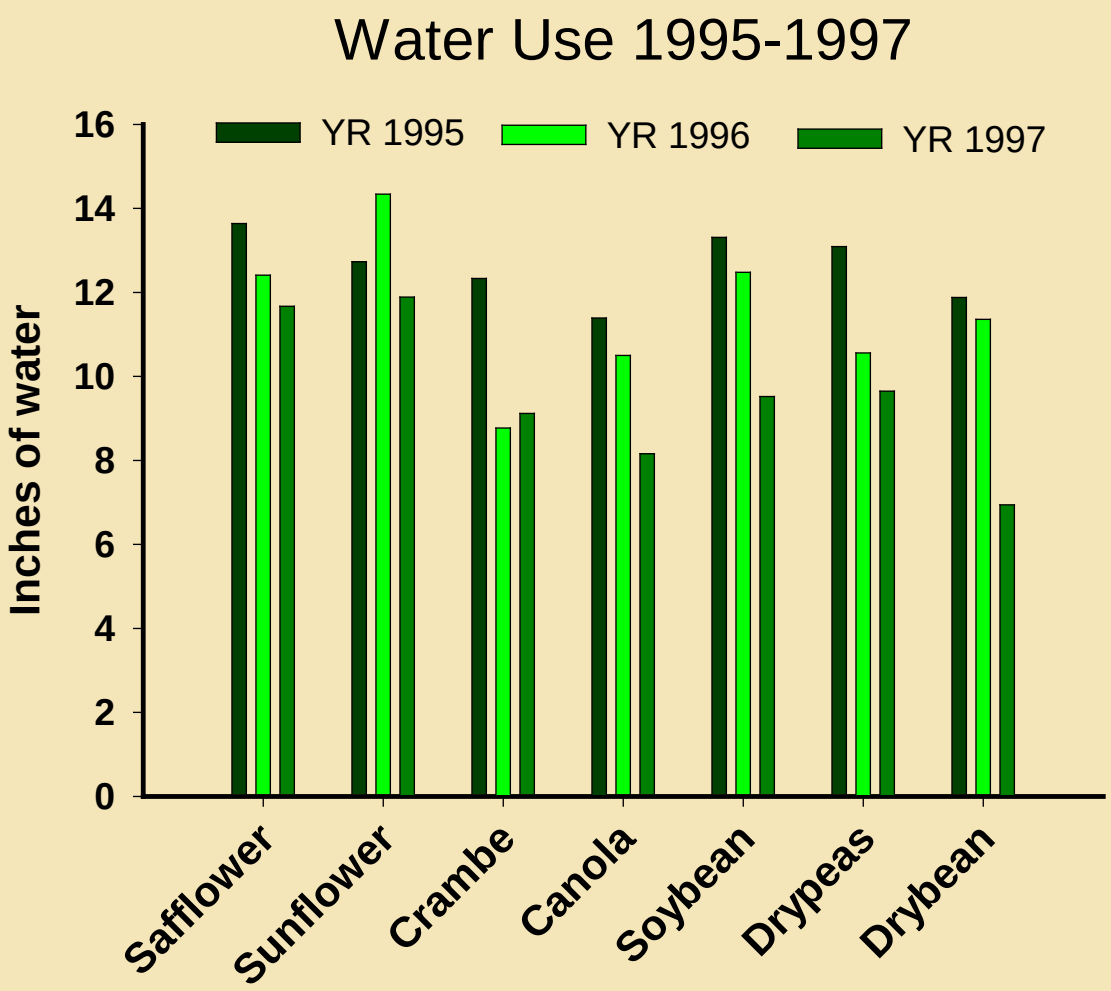


Fig. F. Water use (soil water depletion plus precipitation) measured in Phase I Alternative Crops Experiment with a neutron moisture meter.