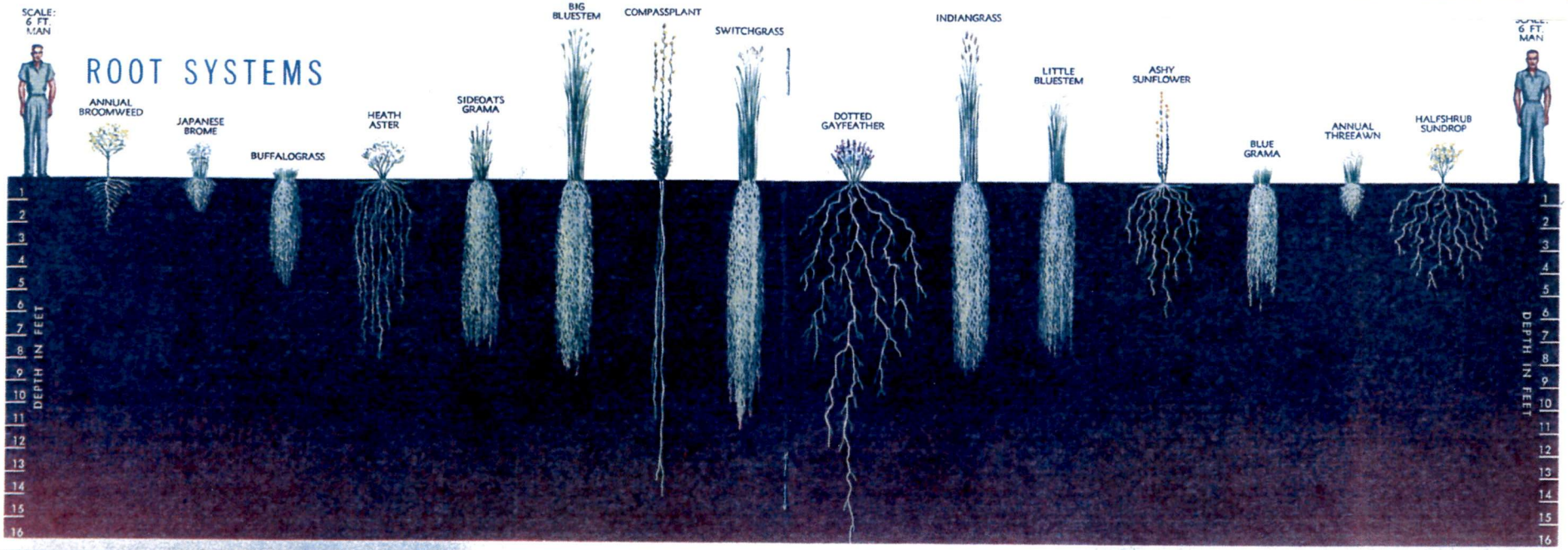
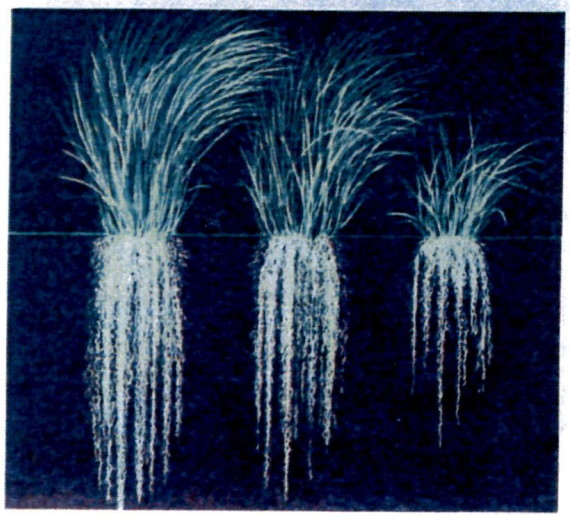
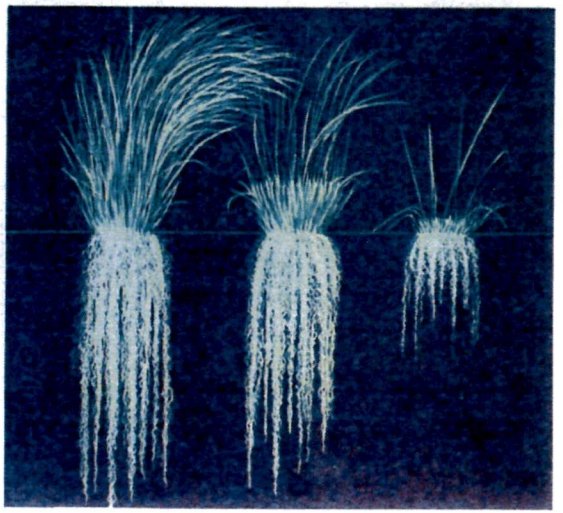




It is almost impossible to imagine the enormous tonnage of root material hidden away in the soil of a bluestem range. Detail weight checks show 6,000 to 7,000 pounds per acre of plant material in the first six inches of soil under excellent bluestem grassland. These roots are essential for vigorous growth because they hold the plant in place; absorb soil water, mineral compounds and nitrates. Perennial plant roots also serve as surplus plant food storage centers. Most of the plant root material is concentrated in the top twelve inches of soil; however as illustrated, the better plants have deep, vigorous feeding root systems. Top growth is visible and dependent on root development for needed plant food – root development is hidden and is dependent on the top growth for manufactured starches and sugars. Thus, sound management encourages root development by permitting adequate top growth at all times.

ROOT DEVELOPMENT AFTER SIX WEEKS OF GROWTH BY LITTLE BLUESTEM SOD CHUNKS TAKEN FROM THREE DIFFERENT RANGES – EXCELLENT, GOOD AND POOR. The excellent range sod produced by weight 15 times more roots and 15 times more leaves in 6 weeks than the poor range sod. The excellent range sod produced 2½ times more roots and leaves than the good range sod. Therefore, this year's abuse can seriously lower next year's forage production. Closely grazed ranges have weakened root systems. Which of these 3 plants will best stand the summer drouth – will produce the most forage next year – will be out in early spring with lots of leaves for grazing? There is a big money-difference in forage from excellent ranges compared to poor ranges.

ROOT DEVELOPMENT FROM LITTLE BLUESTEM SOD CHUNKS AFTER SIX WEEKS' GROWTH AT THREE DIFFERENT CLIPPING HEIGHTS. The plant on the left was not clipped – the middle plant was clipped back to a 3-inch height each week – the plant on the right was clipped back to a 1½-inch height each week. Or one plant was not grazed, one grazed properly and one plant was grazed too close. Note how the close 1½-inch weekly clipping seriously retarded root development. In similar clipping tests covering an entire growing season, closely clipped plants (1½ inches) produced only 20% as much forage as the plants that were not clipped. This shows that when plants are grazed too close the roots soon disappear. Thus, lower forage production.



Right and left illustrations are watercolors from photographs by J. E. Weaver and R. W. Darland.