

SOIL HEALTH-KEY TO DROUGHT RESILIENCY

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WHAT IS HEALTHY SOIL?



THE ANSWER IS TO IMITATE A NATIVE ECOSYSTEM



Source: Gabe
Brown, Bismarck,
ND



- 1. Lack of disturbance**
- 2. Keep Soil Covered**
- 3. Living Roots in the soil all year long**
- 4. Diversity**
- 5. Livestock**

ATIVE RANGELAND



Source: Gabe Brown, Bismarck, ND

Water Erosion



Wind erosion



DISURBANCE AND KEEPING IT COVERED

Soil Temperature



Soil temp on soil
with residue cover.
88F

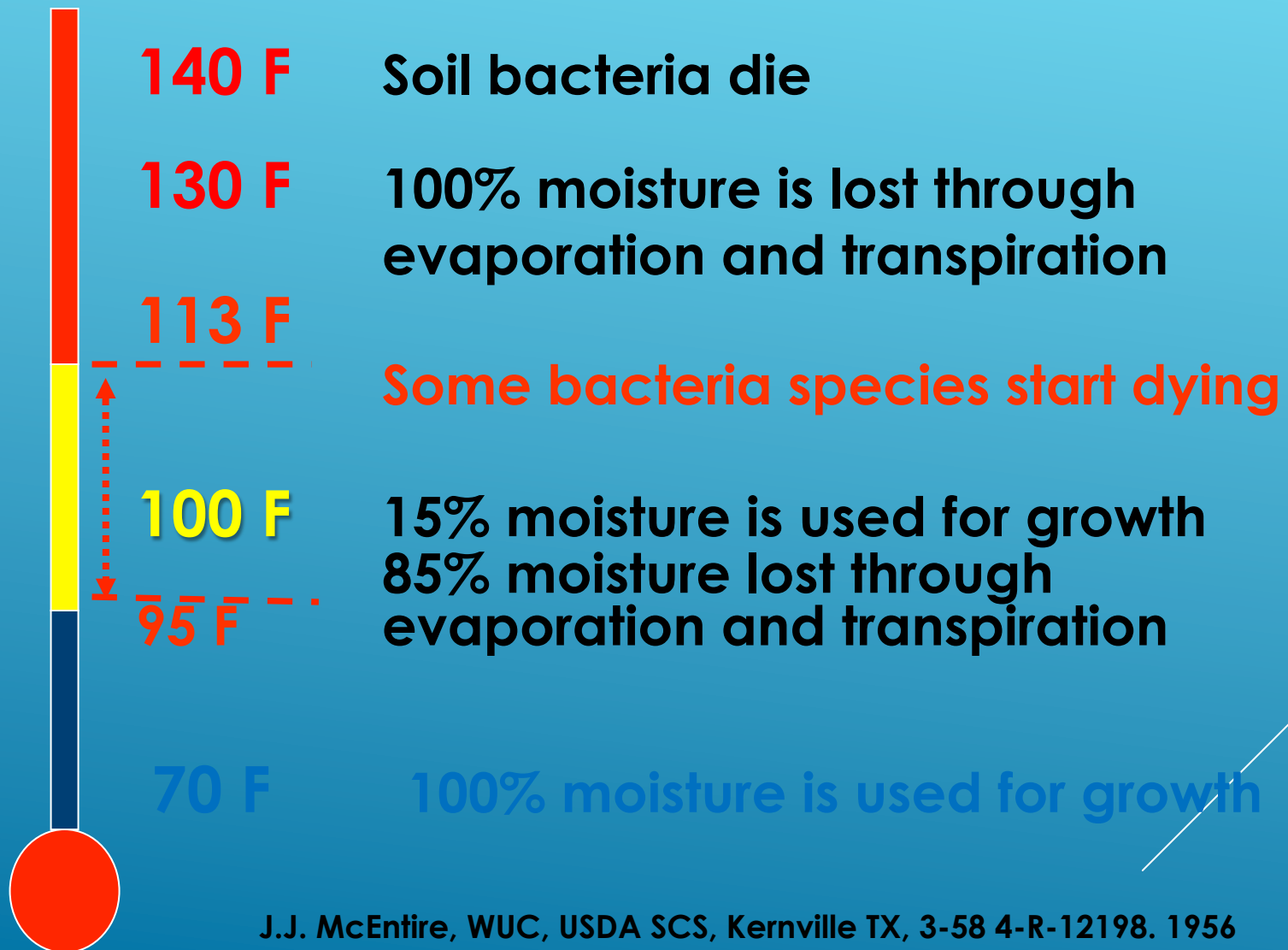
August 10, 2011
Air temp this afternoon was about 85F

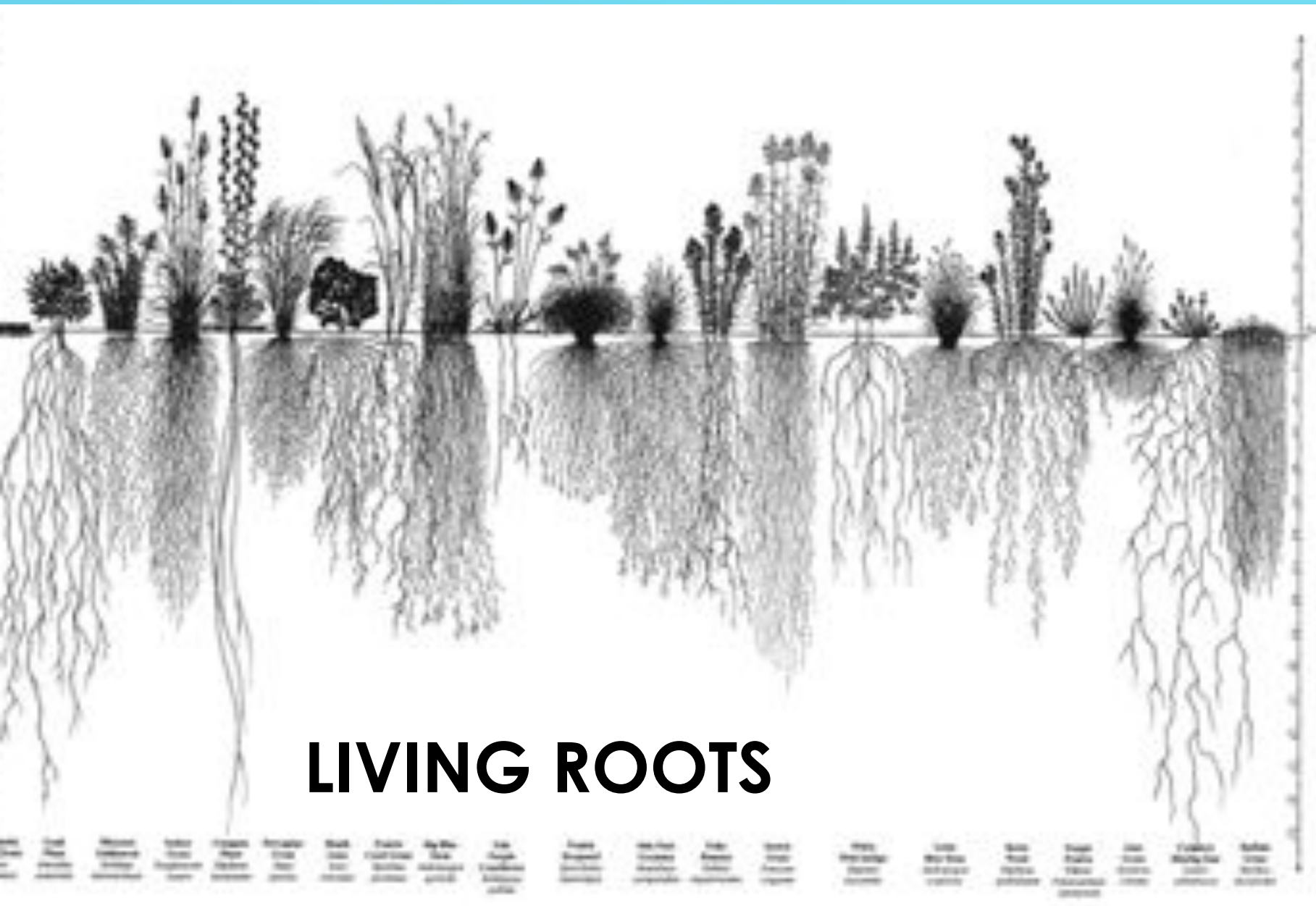
Soil temp on
bare soil. 98F

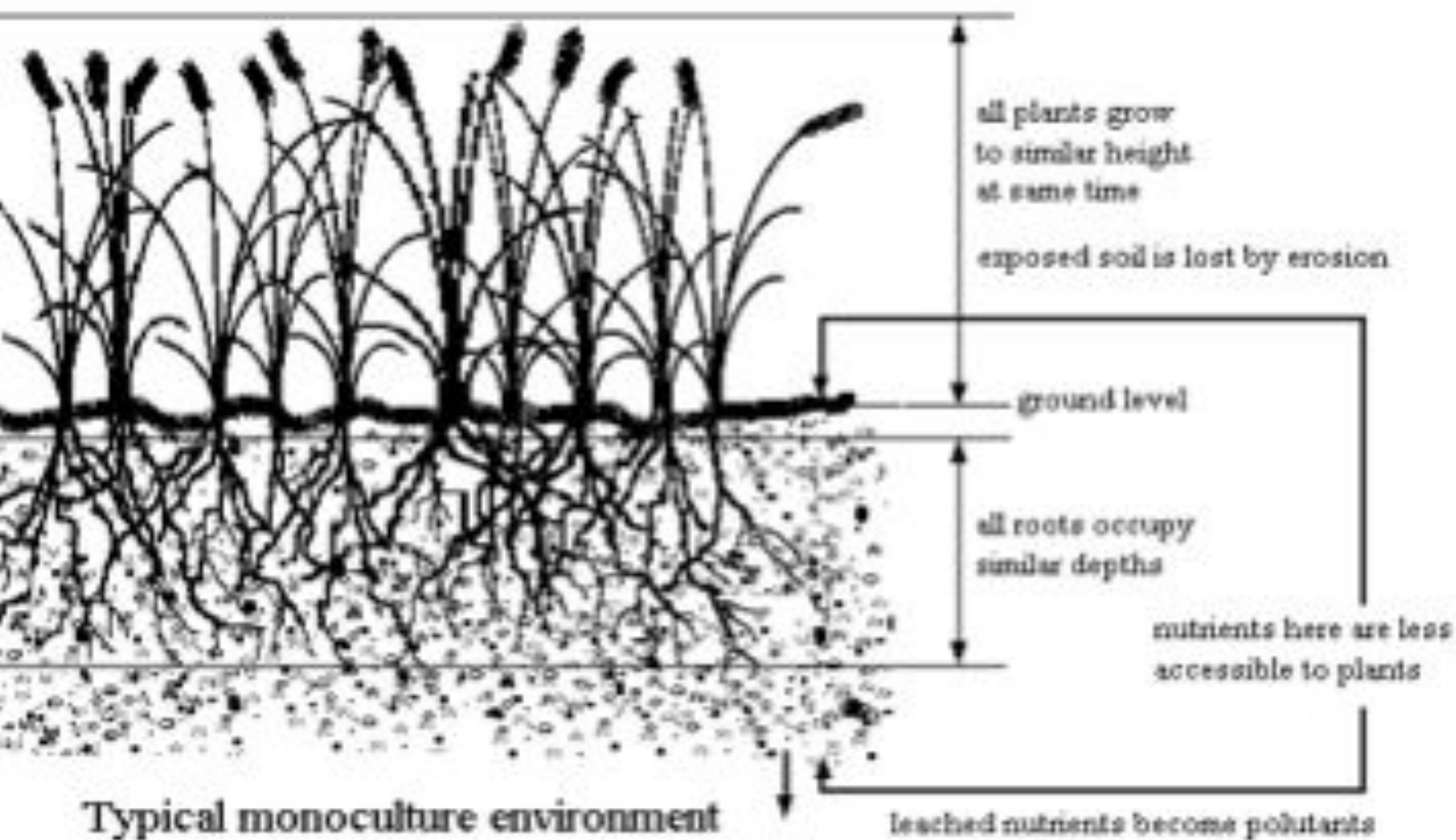
Soil temp on soil
with residue cover
and under
sunflower canopy.
78F



HOW HOT IS TOO HOT?







IF THERE IS DIVERSITY ABOVE GROUND, THERE
IS DIVERSITY BELOW GROUND



Source: Gabe Brown, Bismarck,

DIVERSITY



Cool-Season Grass



Cool-Season
Broadleaf



Warm-Season Grass



Warm-Season
Broadleaf



Source: Gabe Brown, Bismarck, ND

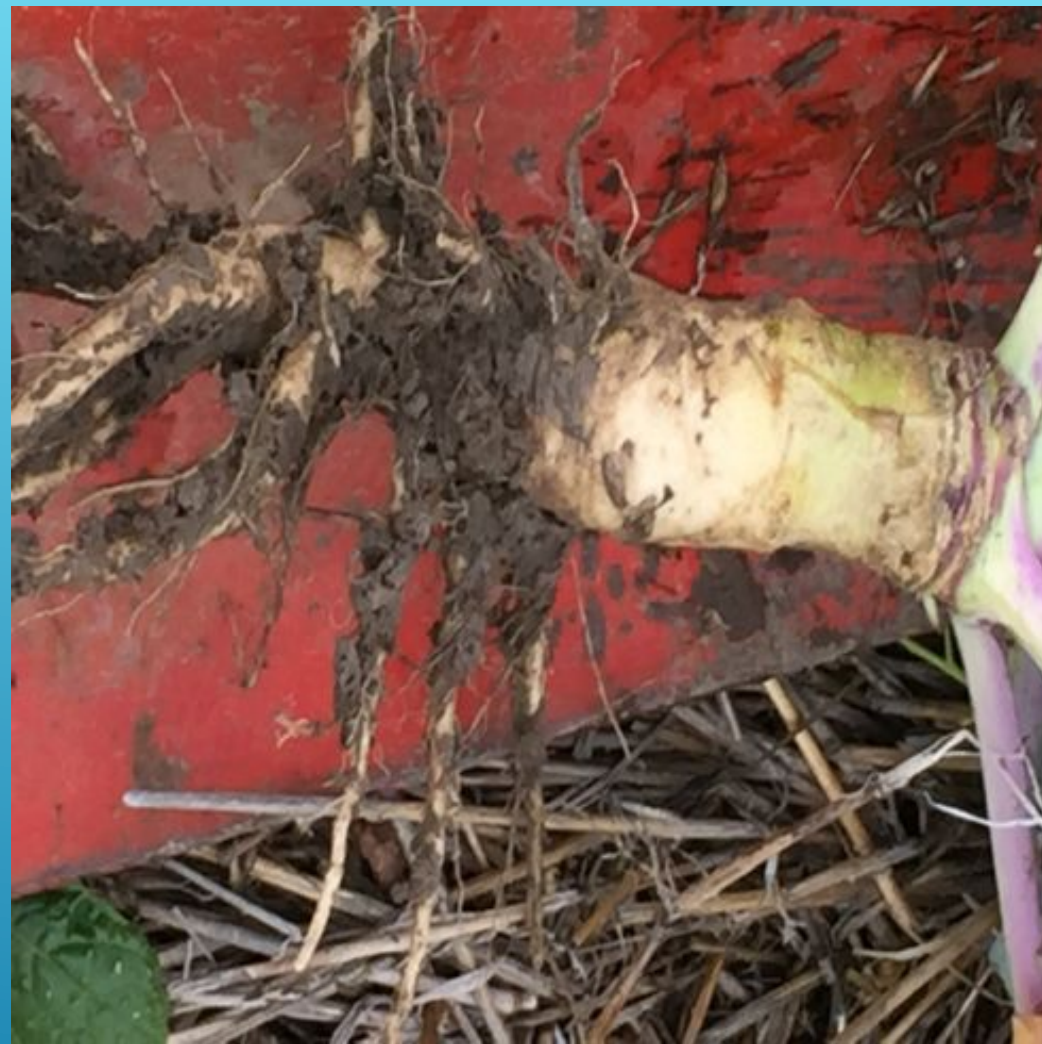


MULTIPLE SPECIES COVER CROPS

SUNFLOWERS



Forage Collards



VERSITY BELOW GROUND



NITROGEN BENEFITS

Source: Gabe Brown, Bismarck, ND

Turnips



Radishes



BREAKING COMPACTION



INTERCROPPING

Improve Soil Health

- ▶ 1. Eliminate Disturbance
- ▶ 2. Living Roots as much as possible
- ▶ 3. Cover the Soil
- ▶ 4. Diversity
- ▶ 5. Livestock



Source: Gabe Brown, Bismarck, ND



DISCUSSION/QUESTIONS