Water Efficient Agriculture in a Semi-Arid Environment

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Water placement method is primary way to increase water efficiency

- Drip irrigation vs. overhead sprinkler saved 36% of total water used
- Use of reemay covers to protect new seedlings and lessen evaporation
Utilizing plastic mulch

- Can increase water savings an additional 10-15%

- Reduces evaporation and competition from weeds

- Warms the soil for quicker plant growth in the Spring and enhances yield
Build soil organic matter

• Data from North America’s longest running field experiment on the impacts of farm production methods on soil quality have revealed that high inorganic N inputs deplete soil carbon, impair soil water holding capacity – and ironically, also deplete soil N
Addition of compost

- Improve water and oxygen infiltration into the soil

- Dr. Whendee Silver, UC Berkeley, documented an additional 900 lbs. of carbon sequestered in an acre of pasture land by top-dressing with ½ inch of compost and then grazing.

- The compost improved grass growth 25-50% and improved water retention an average of 2,800 gallons per acre.
Composting and cover cropping has raised our S.O.M. from 1.5% to 5-7%
Compost inoculates soils with bacteria, fungi and actinomycetes.

Microbial activity drives the process of aggregation and enhancing soil structural stability.

Some carbon fixed by plants during photosynthesis is exuded by roots to feed soil microbes.
Keep live plants growing in the ground as much as possible.

- Utilizing cover and companion crops whenever a crop is not being grown
- ....to keep root exudates going to feed microbes that enhance availability of essential plant nutrients.
Ultimate Step:
Regenerative farming

- Keep mulch or debris on soil surface as much as possible.
- Eliminate tillage
- Maintain a high level of soil microbial life to cycle nutrients
- Reduce use of synthetic N & P fertilizers that inhibit the complex biochemical signaling between plant roots and microbes
