



Hopi Agriculture: A Time Tested Anomaly

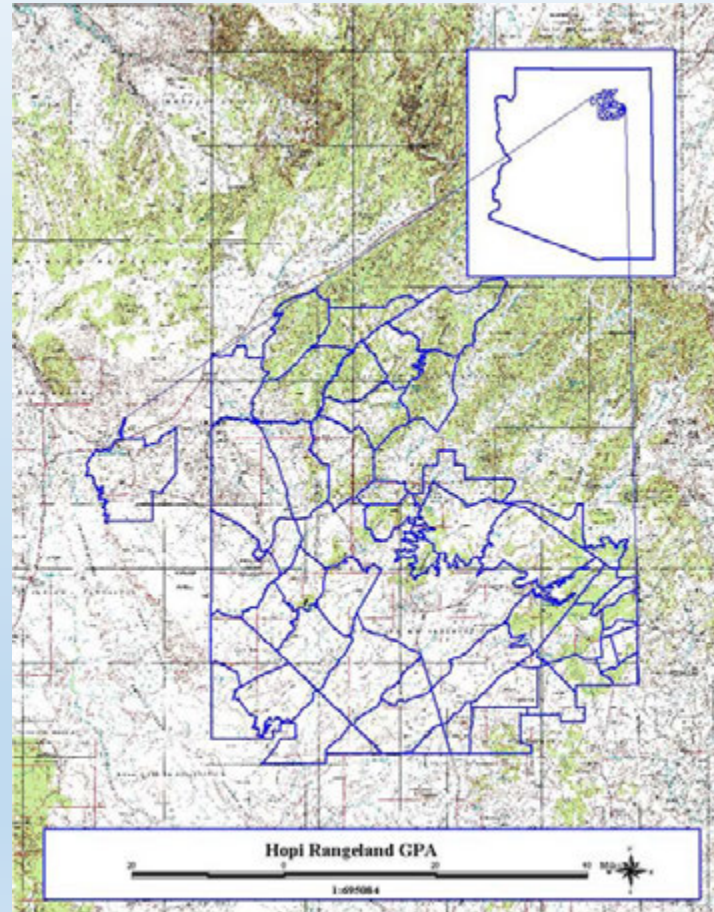
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Location and Environmental Factors



- Semi Arid Climate
- Northeastern Part of Arizona
- Colorado Plateau
- 4500-5500 Foot Elevation
- 6-10 Inches Annual Rain Fall
- Desert Shrubs and Grasses
- Sandy and Clay Loam Soils



Culturally Based Agriculture Incorporates Generational Knowledge



What Makes Growing Crops in a Semi Arid Region Possible without Substantial Annual Precipitation or Irrigation?



Two Key Factors in Hopi Agriculture

Amount of Snowfall



Amount of Rainfall



Water Budget Based on Soil Moisture (Outward vs. Inward)

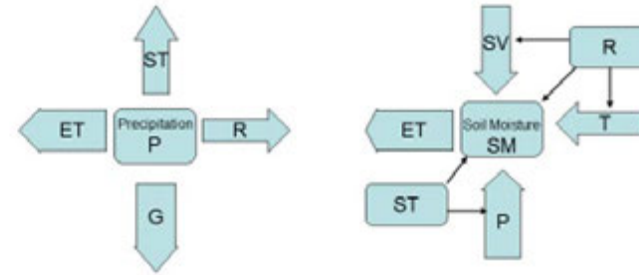
Water Budget Definitions

- P=Precipitation
- ET=Evapotranspiration
- ST=Soil Texture
- T=Topography
- SV=Spatial Variation
- R=Runoff
- G=Groundwater
- SM=Soil Moisture



Fig. 1 Water Budget Comparison:
Outward (Typical) v. Inward (Hopi)

- Typical Water Budget
 $P = ET + G + R + ST$
- Hopi Water Budget
 $SM = P + ET + R + ST + SV + T$



How Do We Incorporate Hopi Farming Techniques Based on Environmental and Climatic Factors?



Use of Existing Vegetation as Indicators of Soil Moisture Prior to Planting



Spacing of Plants



Location of Fields



Incorporation of Low Impact Adaptive Management Techniques for Hopi Crops



A Few More Low Impact Adaptive Management Techniques



What are the End Results of Hopi Farming Practices?



Abundance of Genetic Diversity



Recapitulation of Drought Tolerant Plants



Revitalization of Nutrients and Soil Moisture for the Following Year



Maintaining Usable Environmental and Cultural Knowledge for the Next Generation



A photograph of a sandy area, possibly a beach or a field, with scattered dried corn husks and several ears of purple corn. The text "Thank You!" is overlaid in the center of the image.

Thank You!