



AGRICULTURAL WATER USE

SALINAS VALLEY GROUNDWATER BASIN



AGRICULTURAL GROUNDWATER USE

IRRIGATION WATER EXTRACTIONS IN MONTEREY COUNTY ARE 20% LOWER THAN 26 YEARS AGO

1996 EXTRACTIONS FOR IRRIGATION WATER = 563,438 ACRE FEET

2022 EXTRACTIONS FOR IRRIGATION WATER = 447,821 ACRE FEET

REDUCTION OF 20% IN 26 YEARS

REDUCTION OF 115,600 ACRE FEET

IRRIGATED ACRES INCREASED BY 5% AMOUNT IN SAME 26 YEARS

GROUNDWATER EXTRACTIONS AVERAGE 442,200 ACRE FEET FOR 2011-2021 (INCLUDES DROUGHTS)

IRRIGATION WATER EFFICIENCY

HOW DID MONTEREY COUNTY
FARMERS REDUCE IRRIGATION
WATER EXTRACTIONS WHILE
EXPANDING IRRIGATED ACRES?

- DECREASED WATER USE WHILE INCREASING YIELDS PER ACRE (BETTER AGRONOMICS)
- RESPONDED EFFICIENTLY TO INCREASED COST OF ELECTRICITY TO PUMP GROUNDWATER
- USE OF TECHNOLOGY TO MANAGE IRRIGATION FREQUENCIES AND DURATIONS

DRIP IRRIGATION (MICRO IRRIGATION)

- UTILIZED ON 82% OF MONTEREY COUNTY CROP PRODUCTION FIELDS
- TARGETS WATER DELIVERY DIRECTLY TO ROOTS OF PLANTS
- MINIMIZES EVAPORATION AND RUNOFF
- MOST CROPS CAN UTILIZE DRIP IRRIGATION
 - *BUT NOT ALL DUE TO MECHANIZATION & END PRODUCT*



PRECISION IRRIGATION PRACTICES

- USE OF SOIL MOISTURE SENSORS
- WEATHER INFLUENCED IRRIGATION CONTROLLERS
- COMPUTERIZED IRRIGATION CYCLES
- APPLY WATER WHEN PLANT IS RECEPTIVE TO UPTAKE
- OPTIMIZED IRRIGATION AVOIDING OVERWATERING



COMPOST USE & MULCHING

- ADDING COMPOST TO SOILS FOR MOISTURE RETENTION HELPS TO REDUCE EVAPORATION AND RUN-OFF
- MULCHING IN VINEYARDS AND ORCHARDS CAN SUPPRESS WEED GROWTH
- LOWERS IRRIGATION WATER NEEDS
- REGULATORY PROGRAMS ARE PROVIDING INCENTIVES
- BIOCHAR PRACTICES DEVELOPMENT



CROP SELECTION & ROTATION

- MORE WATER-WISE CROP VARIETIES AVAILABLE
- INCREASED DROUGHT TOLERANCE
- HEAVY CROP ROTATION TO ENHANCE SOIL HEALTH
 - *BERRIES TO LEAFY GREENS TO VEGGIES – FOUR YEAR CYCLE*
- DIVERSIFYING CROPS AIDS IN MANAGING IRRIGATION WATER USE



CONSERVATION TILLAGE

- RESEARCH INTO REDUCED TILLAGE OR NO TILLAGE CROP CYCLES
- IMPROVES SOIL MOISTURE RETENTION
- MINIMIZES SOIL DISTURBANCE FOR REDUCED WATER RUNOFF
- SCALING OF REGENERATIVE TECHNIQUES FOR FRESH FOOD CROPS



WATER RECYCLING (RECLAMATION)

- USE OF RECLAIMED WATER FOR CROP PRODUCTION
 - *FIRST PROJECT APPROVED IN CALIFORNIA FOR FRESH PRODUCTS*
- CASTROVILLE SEAWATER INTRUSION PROJECT (CSIP)
 - *IRRIGATES 12,000 ACRES OF COASTAL PRODUCTION LANDS*
 - *REDUCES GROUNDWATER RELIANCE*
 - *LESS TREATMENT NEEDED THAN DRINKING WATER*
- MINIMIZES EXPANSION OF SEAWATER INTRUSION BY REDUCING GROUNDWATER EXTRACTIONS
- OPPORTUNITIES TO OPTIMIZE AND EXPAND CSIP PROJECT



IRRIGATION WATER MANAGEMENT

- COMPUTERIZED IRRIGATION SCHEDULING
- INFORMED DECISIONS BASED ON SOIL MOISTURE, CLIMATE FLUCTUATIONS FOR TEMPERATURE AND WIND
- TECHNOLOGIES EVOLVING FOR MULTIPLE CROP VARIETIES
- IRRIGATION TECHNOLOGIES EMERGING FOR INCREASED EFFICIENCY
- ADVANCED METERING INFRASTRUCTURE (AMI)



GENETIC ENGINEERING

- DEVELOPMENT OF NEW CROP VARIETIES THAT UTILIZE LESS WATER TO ACHIEVE HARVEST QUALITY AND YIELD
- DISEASE RESISTANT VARIETIES THAT REQUIRE LESS CROP PROTECTION INPUTS
- IMPROVED SHELF LIFE OF HARVESTED CROPS, LESS WASTE AT HARVEST



SOIL BIODIVERSITY

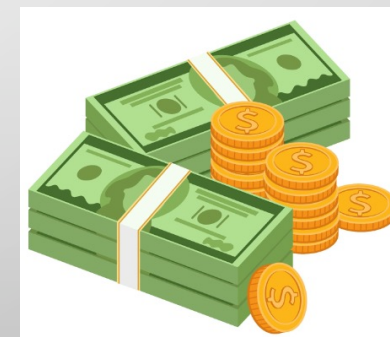
- IMPROVEMENTS TO SOIL HEALTH PRACTICES
 - *COVER CROPPING*
 - *COMPOST AMENDMENTS*
 - *ORGANIC QUALITY ENHANCEMENTS*
- INCREASE SOIL WATER-HOLDING CAPACITY
- REDUCE IRRIGATION CYCLE FREQUENCIES



160 YEARS OF CROP
PRODUCTION IN
SALINAS VALLEY

GOVERNMENTAL INCENTIVES

- PROGRAMS AND INCENTIVES AIMED AT PROMOTING WATER CONSERVATION PRACTICES AND INFRASTRUCTURE IMPROVEMENTS
- ADOPTION OF NEW WATER-SAVING TECHNOLOGIES
- REGULATORY INCENTIVES: IRRIGATED LANDS REGULATORY PROGRAM, HEALTHY SOILS, SWEEP AND FARMER PROGRAMS
- ENCOURAGE CONSTANT IMPROVEMENT



IRRIGATION WATER USE PRACTICES SALINAS VALLEY GROUNDWATER BASIN

HIGH ADOPTION

DRIP IRRIGATION

CROP SELECTION & ROTATION

WATER RECYCLING

IRRIGATION WATER MANAGEMENT

SOIL BIODIVERSITY

MODERATE ADOPTION

PRECISION IRRIGATION PRACTICES

COMPOST & MULCHING

GOVERNMENTAL INCENTIVES

LOW ADOPTION

CONSERVATION TILLAGE

GENETIC ENGINEERING

Early adopters
Ever evolving



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