Converting Food Deserts into OAASIS: (Organic Adaptive Agricultural Systems Integrated for Sustainability)

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OAASIS

PRODUCTION

12 MONTHS/YEAR
VERTICAL GRO-ARRAYS
CONTAINER-HOUSED
COMMUNITY FOCUSED
VALUES BASED

INPUTS

LABOR
ENERGY
WATER
SEEDS
SOILS

LED GROW LIGHTS
HEAT-COOLING
INDIGENOUS

OUTPUTS

SCHOOLS
CLINICS
FARMERS MARKETS
RESTAURANTS
MARKETS
SALES TRADE
FAMILIES
ELDERCARE
EVENTS
INPUTS

LED GROW LIGHT PANELS

PORTABLE SOLAR PANELS

WATER COLLECTION

AGRO-GROWTH CONTAINERS

HARVEST LABOR
INPUTS: LABOR & PERSON-POWER

- ELDERS
- SCHOOL CHILDREN, TEACHERS
- COMMUNITY MEMBERS
- EXPERTS & TRAINERS
INPUTS: ENERGY, LIGHT & WATER

- HEAT & COOLING --- SOLAR, PORTABLE SOLAR, WIND, LOCAL GEOTHERMAL
- LED GRO-LIGHTS --- COMMERCIALY AVAILABLE, TIMED, DIURNALLY OPTIMIZED
- CONTAINER LIGHTS & PUMPS --- MINIMAL FOR ACCESS & AUTO-WATERING
- WATER --- LOCAL OR CATCHMENT WATER STORED
INPUTS: SEEDS & SOIL

SEEDS
• HERITAGE
• LOCAL COLLECTIONS
• SEEDBANKS

SOIL
• LOCAL
• NOURISHED
• ORGANIC
FOOD PRODUCTION—DESIGN CRITERIA

12 MONTHS/YEAR
VERTICAL GRO-ARRAYS
CONTAINER-HOUSED
COMMUNITY FOCUSED
VALUES BASED
WHAT TO GROW?

- GREENS, MICRO-GREENS
- HERBS, INCLUDING MEDICINALS
- VEGETABLES
- MUSHROOMS -- LOCAL, NUTRIENT-RICH, & MEDICINAL

HOW TO GROW?

- SOIL TRAYS, PRIMARILY
- DIURNAL LIGHT & TEMP CYCLES
- LED-OPTIMIZED PHOTOSYNTHESIS
- ORGANIC ONLY
- SELECTED SEEDS & CUTTINGS
- LOCAL WATER SOURCES
WHAT TO GROW?

- Microgreens
- Live Herb Tray
- Veggies
- Lion's Mane Mushroom
- Blue Oyster Mushroom
HOW TO GROW?

- ORGANIC ONLY
- SELECTED SEEDS & CUTTINGS
- LOCAL WATER SOURCES

- SOIL TRAYS, PRIMARILY
- DIURNAL LIGHT & TEMP CYCLES
- LED-OPTIMIZED PHOTOSYNTHESIS
There are several objectives of OAASIS:

- **Optimize** soil-based containerized agro-ecosystems in accordance with community and the technical needs assessment;

- **Train** community members on containerized agroecosystems development and operations;
There are several objectives of OAASIS:

- Evaluate the production benefits/challenges of container growth systems including operating costs, crop yield and nutritional value, water supply & quality, and soil/media nutrient cycling;

- Support the community in developing a sustainable agricultural & nutritional community food security plan using OAASIS
PLANT SUBSTRATES:
SOILS VERSUS HYDROPONICS

HYDROPONIC SYSTEMS

NO SOIL SUBSTRATE
ADDITIVES IN WATER
• NUTRIENTS
• OXYGEN/CO2 BALANCE

CONTROLS
TASTE ISSUES

SOILS

TEXTURE
SOIL ECOLOGY
• MYCORRHIZAE
• NITROGEN FIXATION
HUMIC SUBSTANCES
BIOGEOCHEMISTRY -- WATER
WORKING THE ‘FARMS’

CONTINUING INVESTMENTS

LABOR:
- VOLUNTEER
- TRADE & BARTER
- COMPENSATED

ENERGY:
- OFF-THE-GRID
- ENCLOSE IN FACILITY

DAY-TO-DAY

PLANT STATUS
- CONTROLS STATUS
- ESTIMATE OF HARVEST TIMING
- EVALUATION VS COMMITMENTS
MONITORING & EVALUATION: IMPROVING THROUGH THE NEW ‘GROWING SEASON’

**COLLECT DATA**
- DAYS TO HARVEST
- YIELD
- WATER CONSUMPTION
- NUTRIENT CONTENT
- ENERGY USE – HVAC
- LABOR HOURS
- PRICE/UNIT (lb)

**MAXIMIZE RE-USE**
- SOILS
- SEEDS
- WATER
- PLANT RESIDUE
HARVESTS: SOCIOECONOMIC INFRASTRUCTURE FOR SUSTAINABILITY

• ARE WE REDUCING THE GAP IN FOOD SECURITY FOR THE COMMUNITY?

• ARE WE IMPROVING NUTRITION FOR OUR PEOPLE?

• ARE WE SELF-SUSTAINABLE?

• HOW DO WE IMPROVE – QUALITY, DIVERSITY OF FOOD, YIELD, MARKETS?
SCHOOLS, CLINICS & ELDERCARE

- Needs Assessments/Population/Facilities
- Estimates of Production & Harvest Timing
- Healthcare & Nutritionist Optimized

- Required Other Nutritional Resources:
  - Fruits
  - Nuts
  - Collected/Outdoor Grown & Harvested Herbs/Vegetables
  - Honey
  - Pollinator Attracting Plants
FAMILIES & EVENTS

- SUBSCRIPTIONS (FAMILIES)
- ESTIMATES OF NEEDS AMONG COMMUNITY
- PRIORITIES -- SCHOOLS, CLINICS, ELDERCARE
- PLANNING FOR EVENTS – CELEBRATIONS, DANCES, POW WOVS
MARKETS

• BEYOND THE NEEDS OF THE COMMUNITY
• FARMERS’ MARKETS – TEND TO BE SEASONAL
• NON-SEASONAL MARKET OPPORTUNITIES
  • GREENS IN WINTER
  • HERB SPICES IN WINTER
• SPECIALTY MARKETS
  • RESTAURANTS
  • GOURMET OUTLETS
  • CONVENIENCE MARKETS
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