

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



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OAAASIS

PRODUCTION



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



LABOR

ENERGY

LED GROW LIGHTS
HEAT-COOLING

WATER

SEEDS

INDIGENOUS

SOILS



INPUTS



FARMERS MARKETS
RESTAURANTS
SALES & TRADE



OUTPUTS



SCHOOLS

CLINICS

MARKETS

FAMILIES

ELDERCARE

EVENTS

INPUTS

LED GROW LIGHT PANELS



PORTABLE SOLAR PANELS



AGRO-GROWTH CONTAINERS



HARVEST LABOR

WATER COLLECTION



INPUTS: LABOR & PERSON-POWER

- **ELDERS**



- **SCHOOL CHILDREN,
TEACHERS**

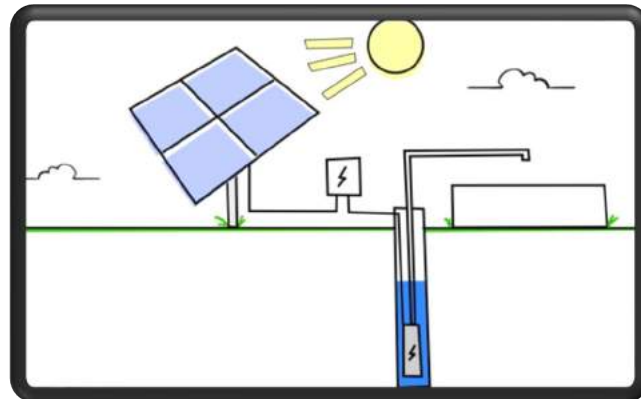
- **COMMUNITY MEMBERS**

- **EXPERTS & TRAINERS**



INPUTS: ENERGY, LIGHT & WATER

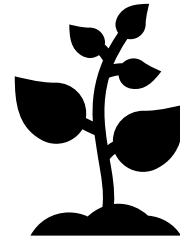
- **HEAT & COOLING** --- SOLAR, PORTABLE SOLAR, WIND, LOCAL GEOTHERMAL
- **LED GRO-LIGHTS** --- COMMERCIALY AVAILABLE, TIMED, DIURNALLY OPTIMIZED
- **CONTAINER LIGHTS & PUMPS** --- MINIMAL FOR ACCESS & AUTO-WATERING
- **WATER** --- LOCAL OR CATCHMENT WATER STORED



INPUTS: SEEDS & SOIL

SEEDS

- HERITAGE
- LOCAL COLLECTIONS
- SEEDBANKS

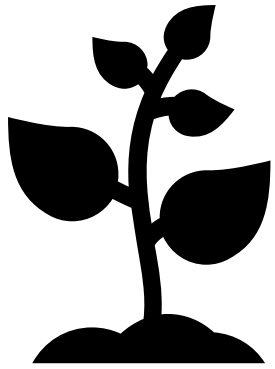


SOIL

- LOCAL
- NOURISHED
- ORGANIC



FOOD PRODUCTION— *DESIGN CRITERIA*



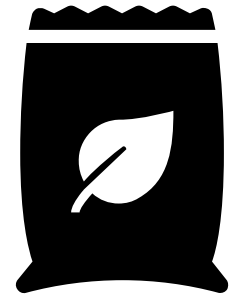
12 MONTHS/YEAR

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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

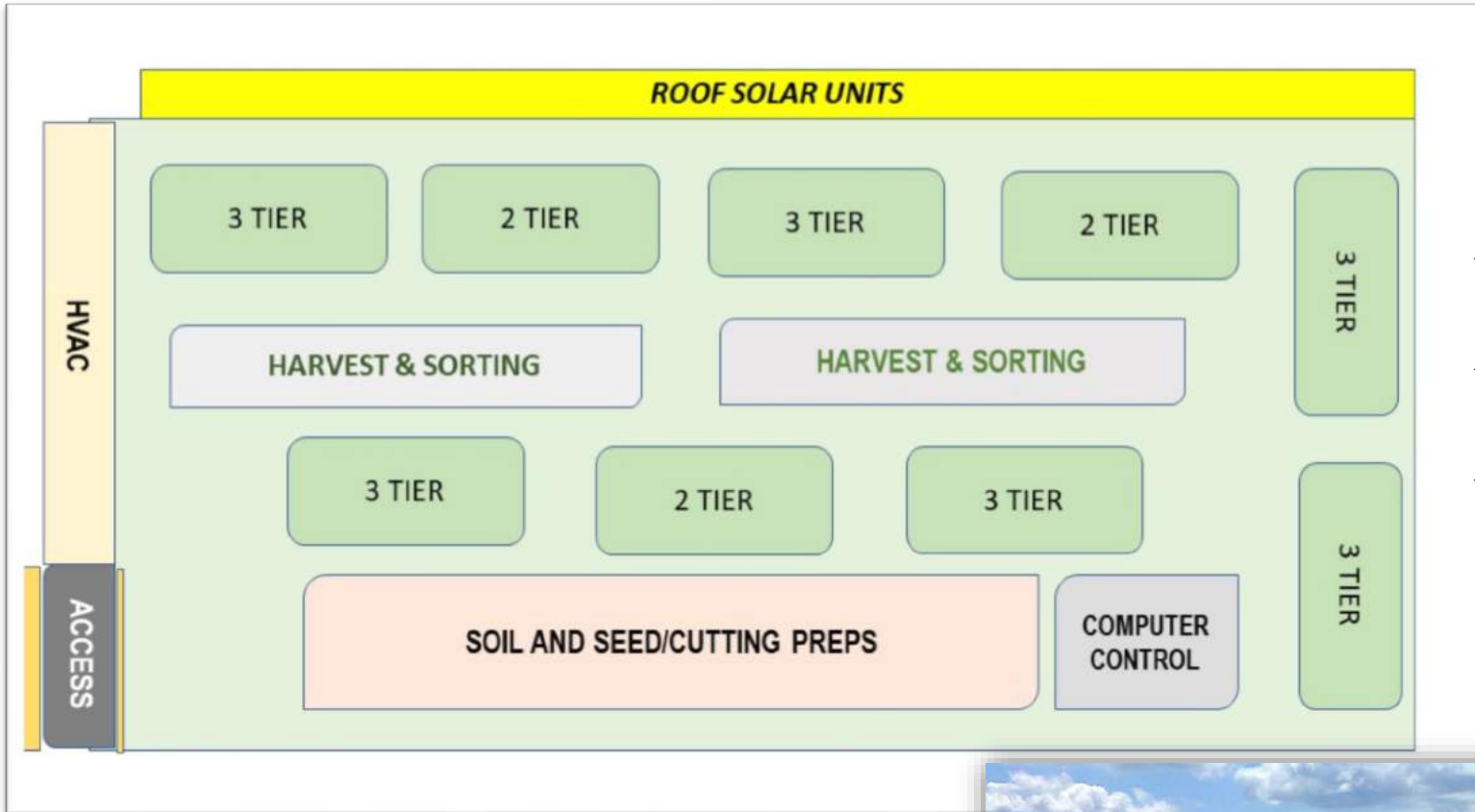


LION'S MANE MUSHROOM



BLUE OYSTER MUSHROOM

HOW TO GROW?



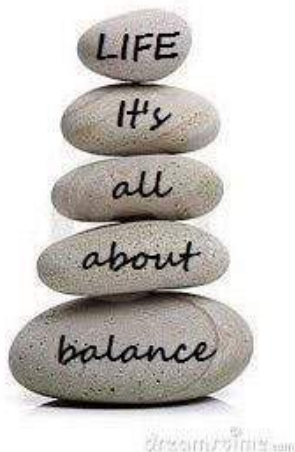
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- ✓ **DIURNAL LIGHT & TEMP CYCLES**
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- ✓ **ORGANIC ONLY**
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There are several objectives of OAAISIS :

- ❖ **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

What's
the
plan?

PLANT SUBSTRATES: SOILS VERSUS HYDROPONICS



SOILS

TEXTURE

SOIL ECOLOGY

- MYCORRHIZAE
- NITROGEN FIXATION

HUMIC SUBSTANCES

BIOGEOCHEMISTRY --WATER



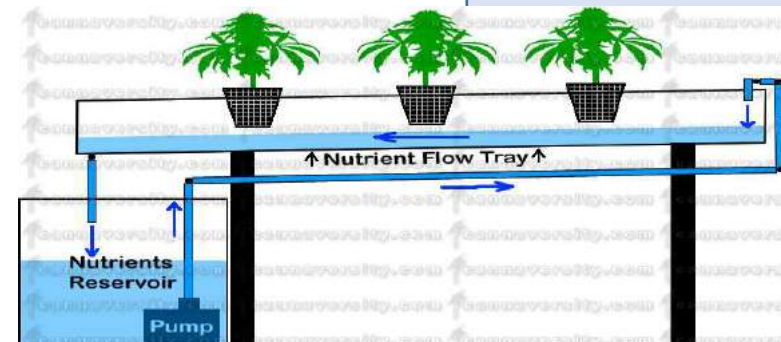
HYDROPONIC SYSTEMS

NO SOIL SUBSTRATE
ADDITIVES IN WATER

- NUTRIENTS
- OXYGEN/CO2 BALANCE

CONTROLS

TASTE ISSUES



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

A pair of hands, one larger and one smaller, are shown holding a small green plant seedling. The hands are positioned in the lower half of the frame, with the larger hand supporting the base of the plant and the smaller hand resting on top. The background is a soft-focus outdoor scene, likely a field or garden, with green foliage and a bright sky. A large, semi-transparent white circle is overlaid on the left side of the image, containing text.

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?**

OUTPUTS



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 WOWS



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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Thank You!

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