



# Community Based Tools for Building Resiliency: Climate Adaptation Field Schools

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RT Permaculture

For Tribal EPA Region 9 Conference 2015

# Need: Community Resilience in an unstable climate



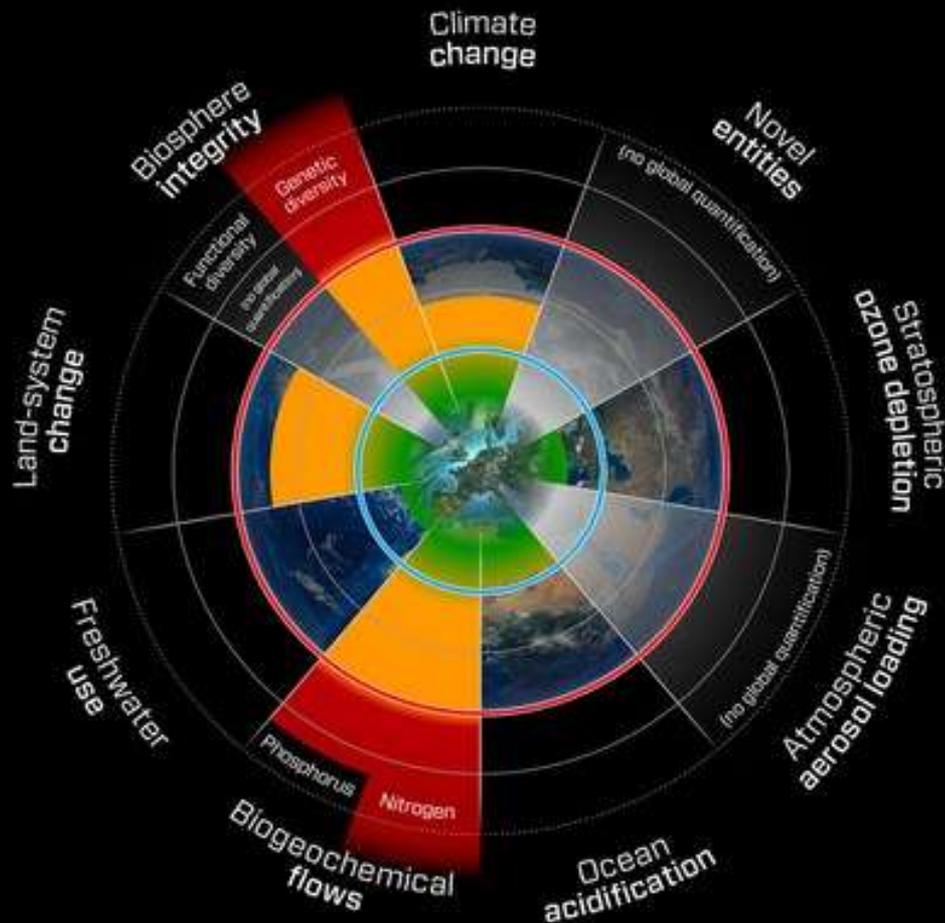
Source: <http://www.keepbanderabeautiful.org/climatechange.html>

# Global Weirding



# Planetary Boundaries

A safe operating space for humanity



Global Changes  
affect

Regions and  
Communities  
Asymmetrically

Source:

<https://www.pik-potsdam.de/news/press-releases/four-of-nine-planetary-boundaries-now-crossed>

# What Can we Do?

## Strategy: Build Resilience at the Regional and Local Level



Source:

<http://huairou.org/resilience/community-resilience-fund>

# Consistent Methods

- **Vision:** Clearly defined goals and purpose
- **Belief:** Positive attitude that it will happen
- **Plan:** Creating a definite plan to achieve it
- **Continued Action:** Consistent and unyielding effort to achieve it; small achievable steps
- **Monitoring and Feedback:** observe and measure results
- **Thoughtful and Informed Response:** build on small successes, course correct, adapt and transform

# The Compound Effect leads to Tipping Points

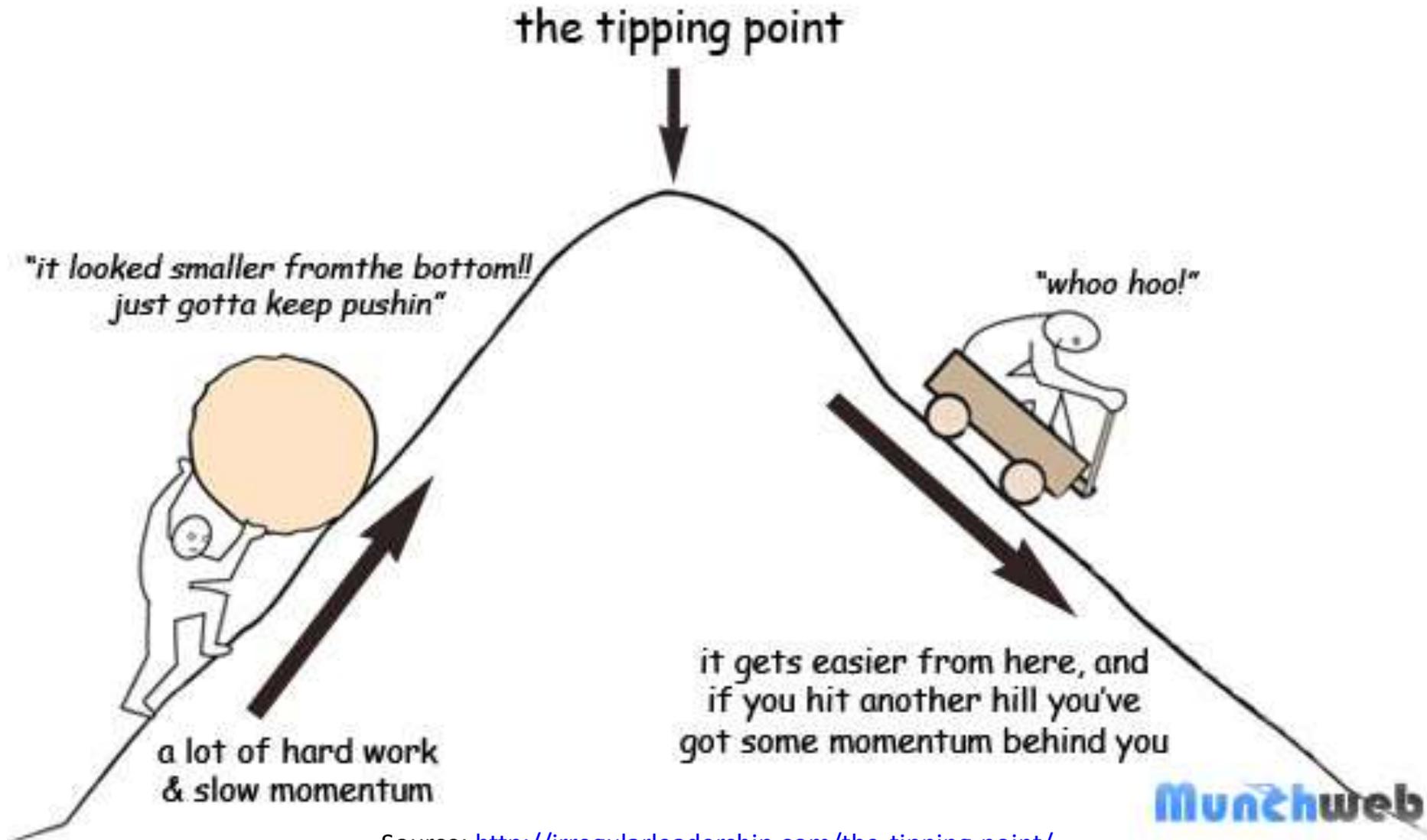
Small, Smart Choices + Consistency + Time  
**= RADICAL DIFFERENCE**

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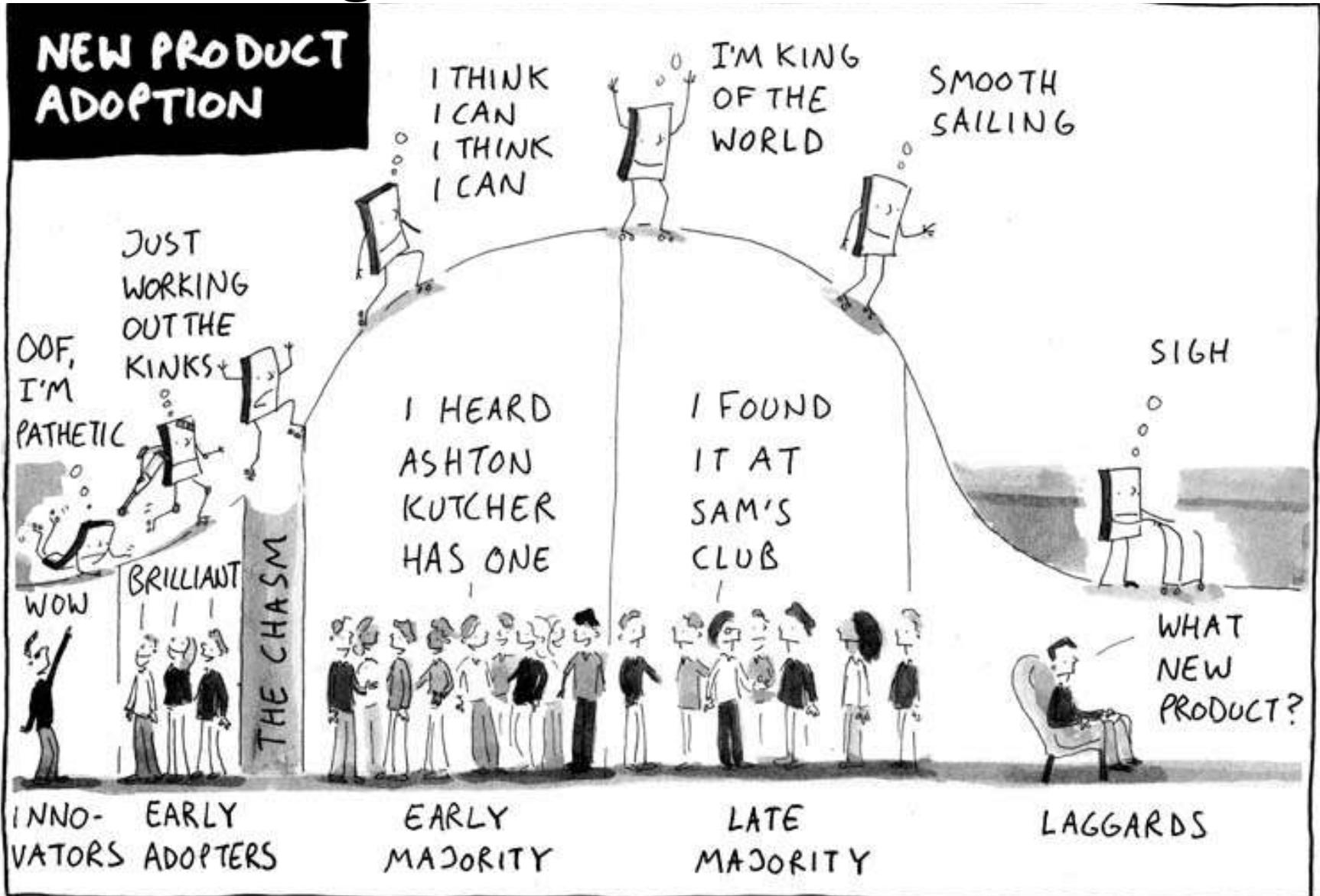
Source: <http://irregularleadership.com/the-tipping-point/>

# The Compound Effect leads to Tipping Points



Source: <http://irregularleadership.com/the-tipping-point/>

# Diffusion of Innovation: Strategies to Cross 'The Chasm'



Friendly Competitions to Inspire Innovation  
towards Cooperative Community Goals

community  
**RESILIENCE**  
challenge



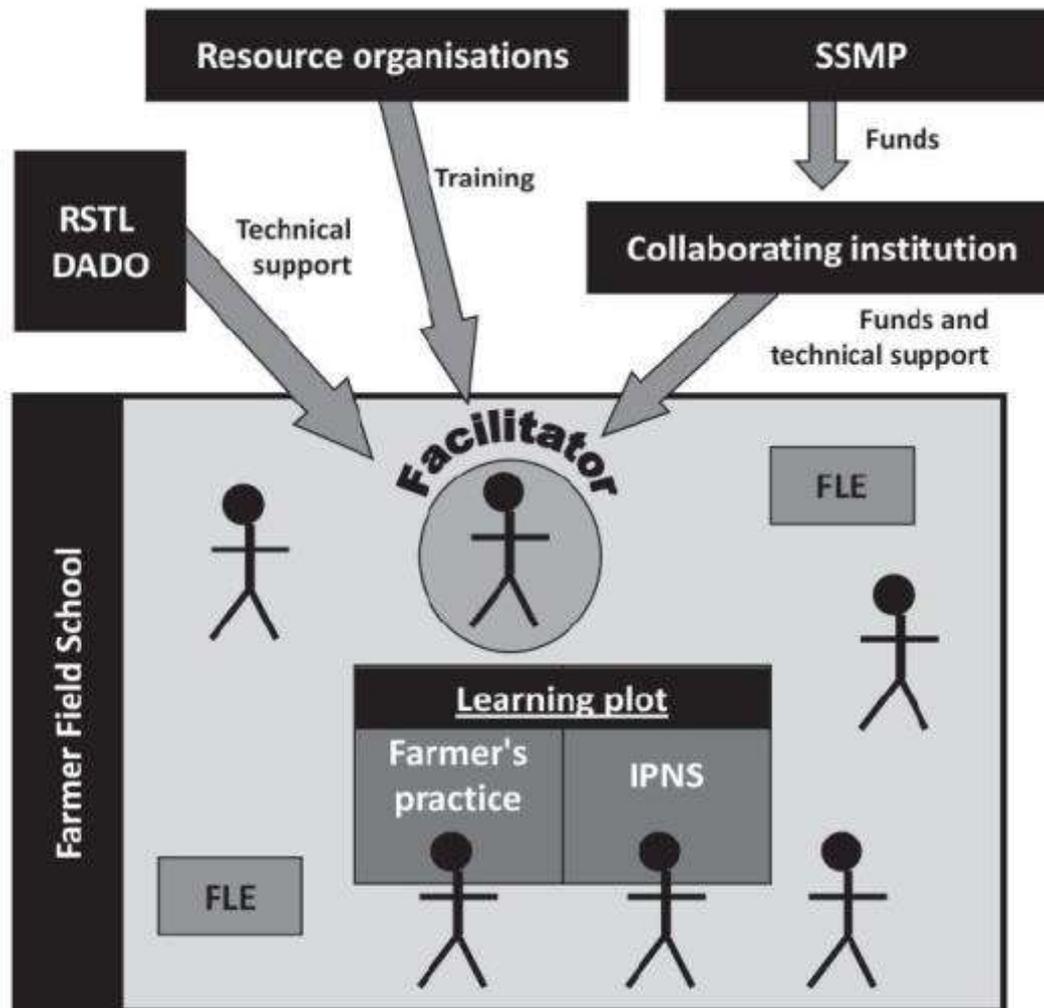
SAVE water | GROW food | CONSERVE energy | BUILD community

[www.dailyacts.org](http://www.dailyacts.org)

# Tools: Capacity Building and Community Empowerment

What are Farmer Field Schools?

- A participatory group based learning approach
- Bring together concepts and methods of Agro-ecology, experiential education, and community development



Source:

<http://teca.fao.org/technology/farmer-field-schools-integrated-plant-nutrient-systems>

# Tools: Capacity Building and Community Empowerment



Source:

<http://thailand.ipm-info.org/ipmdanida/24.htm>

Why are Farmer Field Schools different?

- Locals are trained in techniques and monitoring
- Trials set up and locals evaluate effectiveness of each method
- Participants meet regularly to evaluate results, identify problems and propose solutions

# Tools: Capacity Building and Community Empowerment

Why are Farmer Field Schools different?

- Multiple trial plots established which test various components
- Long term support through continued coaching and training



# Foundations for Adoption of Novel Practices: Finding the Right People



# Path to Success

## Slight Edge Life Paths

### EASY TO DO

Simple disciplines made consistently over time

- Responsibility/Discipline
- Value Driven

What's uncomfortable early becomes comfortable later

**PHILOSOPHY → ATTITUDE – ACTIONS – RESULTS – LIFESTYLE**

What's comfortable early becomes uncomfortable later

- Blame/Neglect
- Entitled

**5% SUCCESS**

Progressive realization of a worthy idea

**95% FAILURE**

Lasts a lifetime



### EASY NOT TO DO

Simple errors in judgement made over time

Source: <http://slightedge.org/>

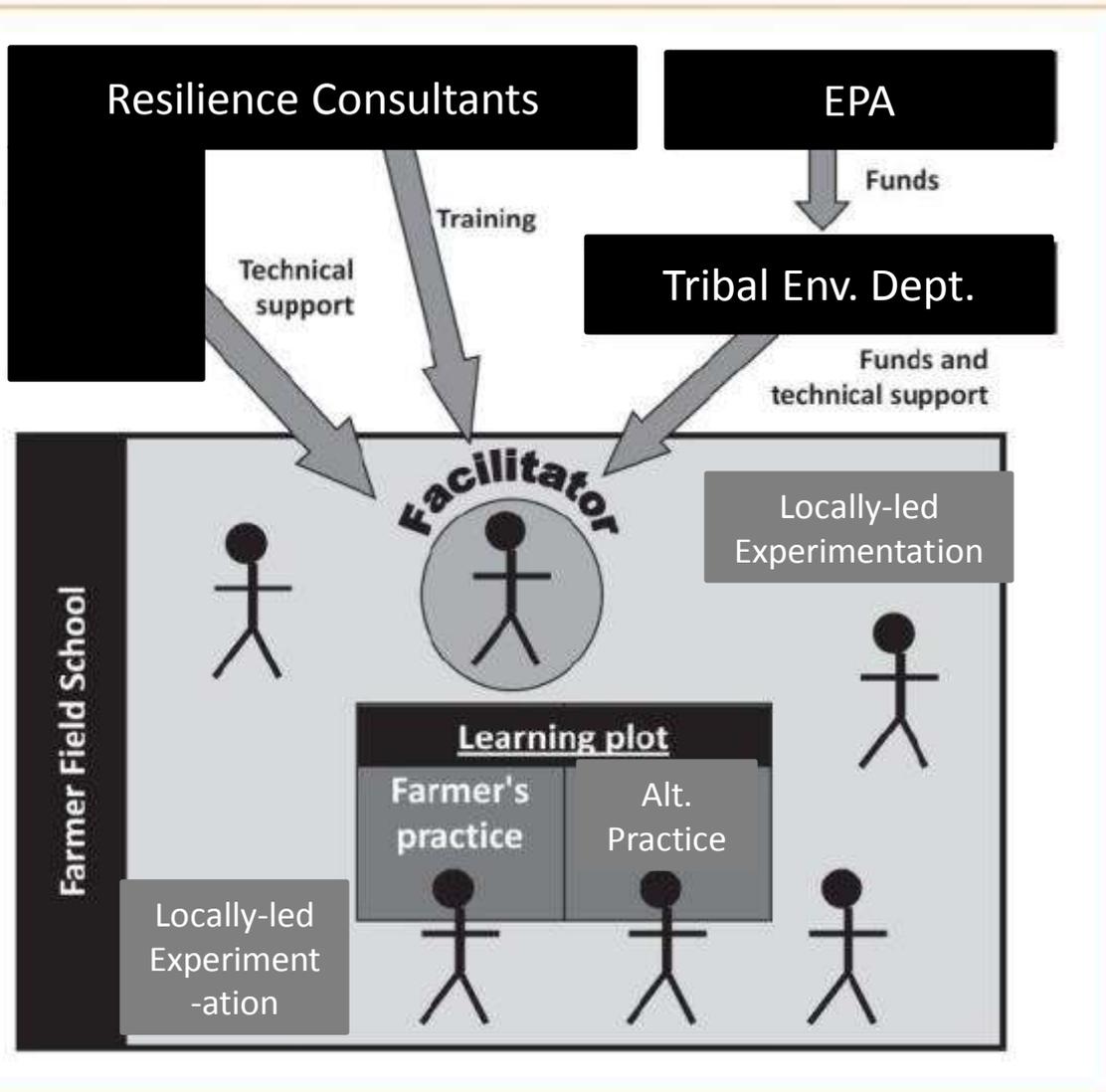
# Slight Edge Principles

1. **Show up:** 80% of success
2. **Be consistent:** repetition builds skills and success
3. **Have a good attitude:** practice positivity individually and as groups
4. **Be committed for a long period of time:** the compound effect: small acts done consistently over time yield great results

# Slight Edge Principles

- 5. Have Faith and a Burning Desire:** keep the big goal in mind and keep pressing forward when problems and obstacles slow your progress
- 6. Be willing to pay the price:** what's uncomfortable now becomes comfortable later, what's comfortable now becomes uncomfortable later
- 7. Practice slight edge integrity:** maintain integrity even when no one is watching, doing the thing you said even long after the mood has left you

# Tools: Capacity Building and Community Empowerment



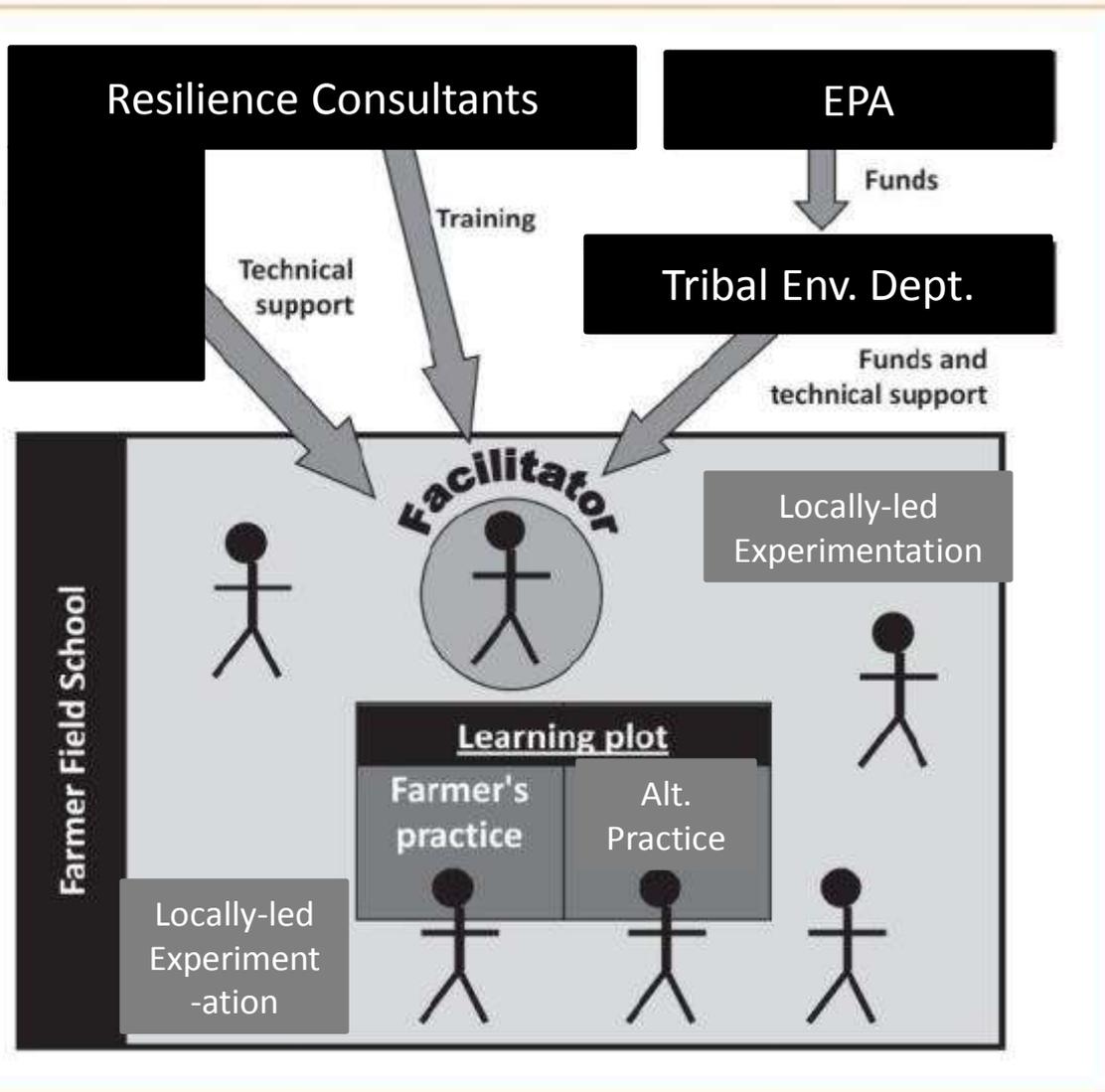
## Adaptation of Model for Tribal Context

- Building Resilience in response to climate change
- Integrate regional Permaculture and Regenerative land management consultant/trainers
- Leverage Funding sources like EPA to Build Community Resources and Expertise

Source:

<http://teca.fao.org/technology/farmer-field-schools-integrated-plant-nutrient-systems>

# Tools: Capacity Building and Community Empowerment



## Adaptation of Model for Tribal Context

- Build local economy through on-the-job training and implementation of BMPs
- Continued training and support to broaden and refine local capacity and scope of practices being implemented

Source:

<http://teca.fao.org/technology/farmer-field-schools-integrated-plant-nutrient-systems>

# Take Action:

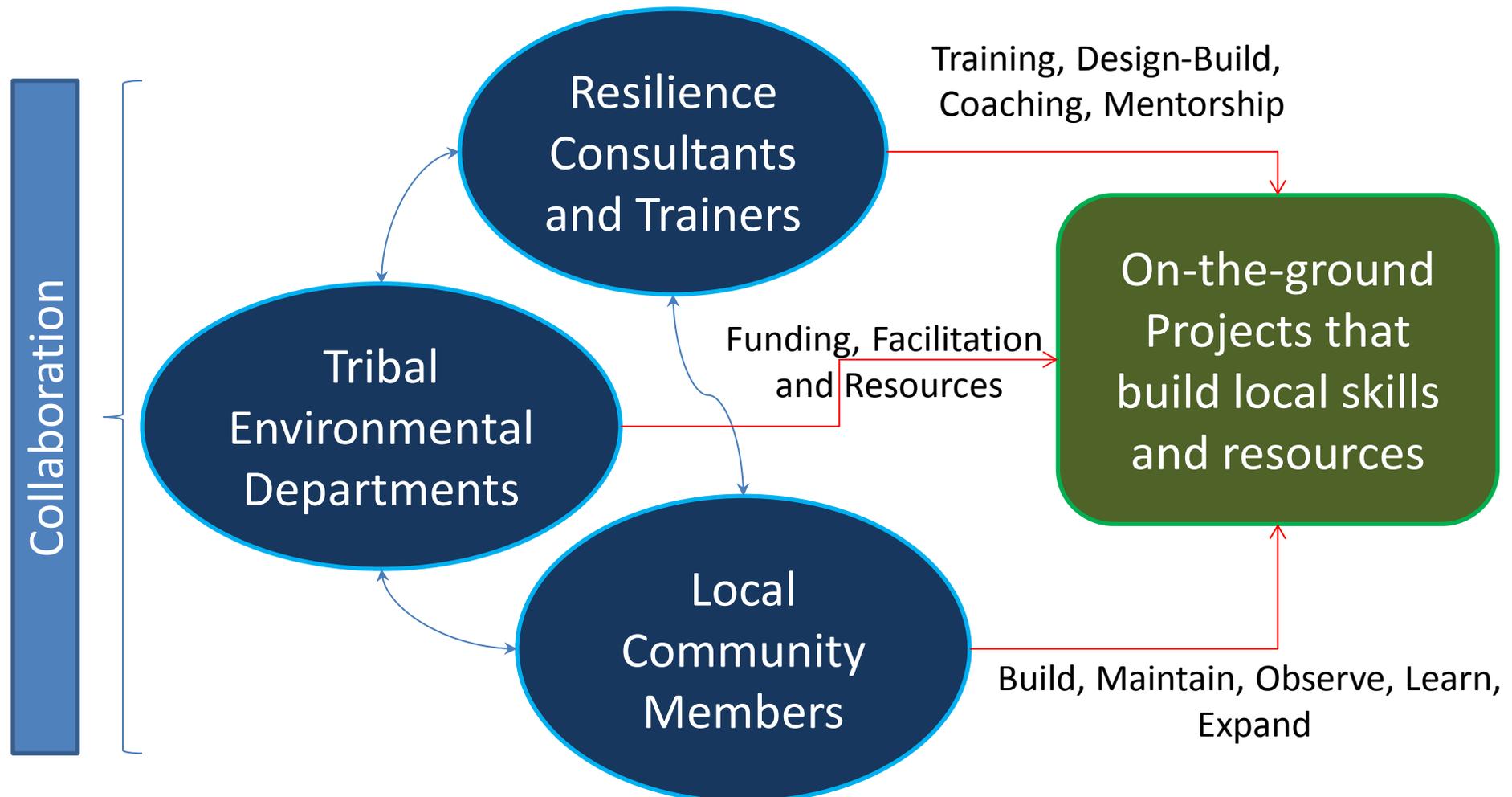
## Practical Applications and Pathways to Build Local and Regional Resilience

### Get initial assessments and trainings

- Connect Resilience Consultants, Env. Dept, and Local Experts and Elders
- Designed to empower local individuals, groups, and organizations
- Practice reading the landscape and applying techniques on-the-ground to build skills and resources

# Take Action:

## Practical Applications and Pathways to Build Local and Regional Resilience



# Take Action:

## Practical Applications and Pathways to Build Local and Regional Resilience

Start small with doable techniques

- SPIN Farming and School Gardens
- Small livestock
- Mother herb gardens and micro-nurseries
- Erosion control and water harvesting

# Small Scale: SPIN Farming





# School Veggie Garden and Hoophouses





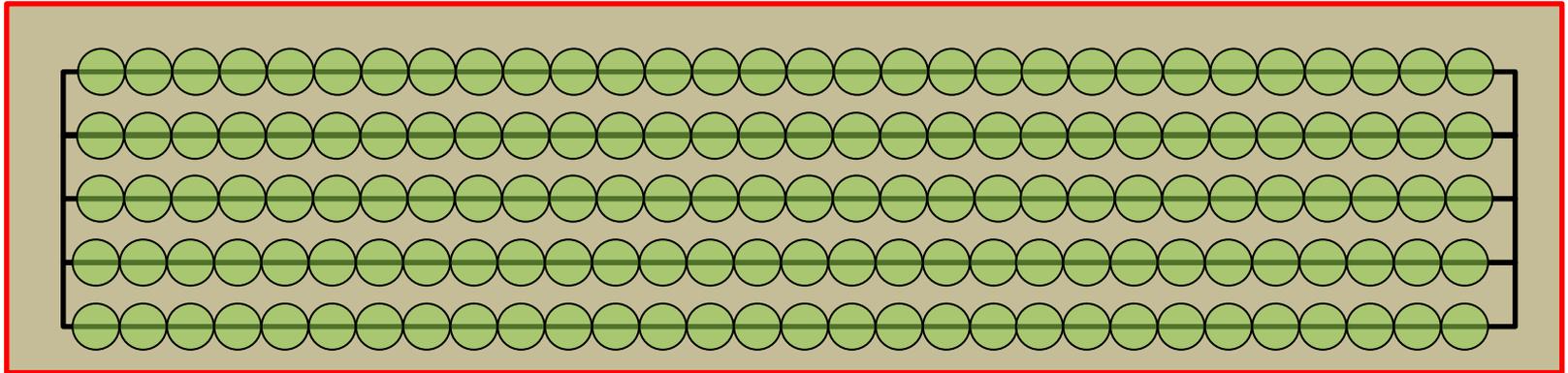
Source: <https://www.facebook.com/groups/Regrarians/photos/>

# Edible Neighborhood Landscapes



**Micro-Nurseries Build Capacity in  
both Plants and Skills**

# Modular high density nursery bed

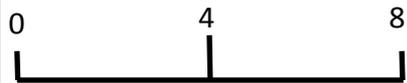


Easy To Build

Easy to Protect from Deer and Rabbits

Buy Plants At Wholesale

Simple and Low-Cost Irrigation



Scale 1" = 4'-0"

Year 1

Annual fruit and vegetable crops



Year 2

Pollinator, culinary, and medicinal herb gardens





Year 1

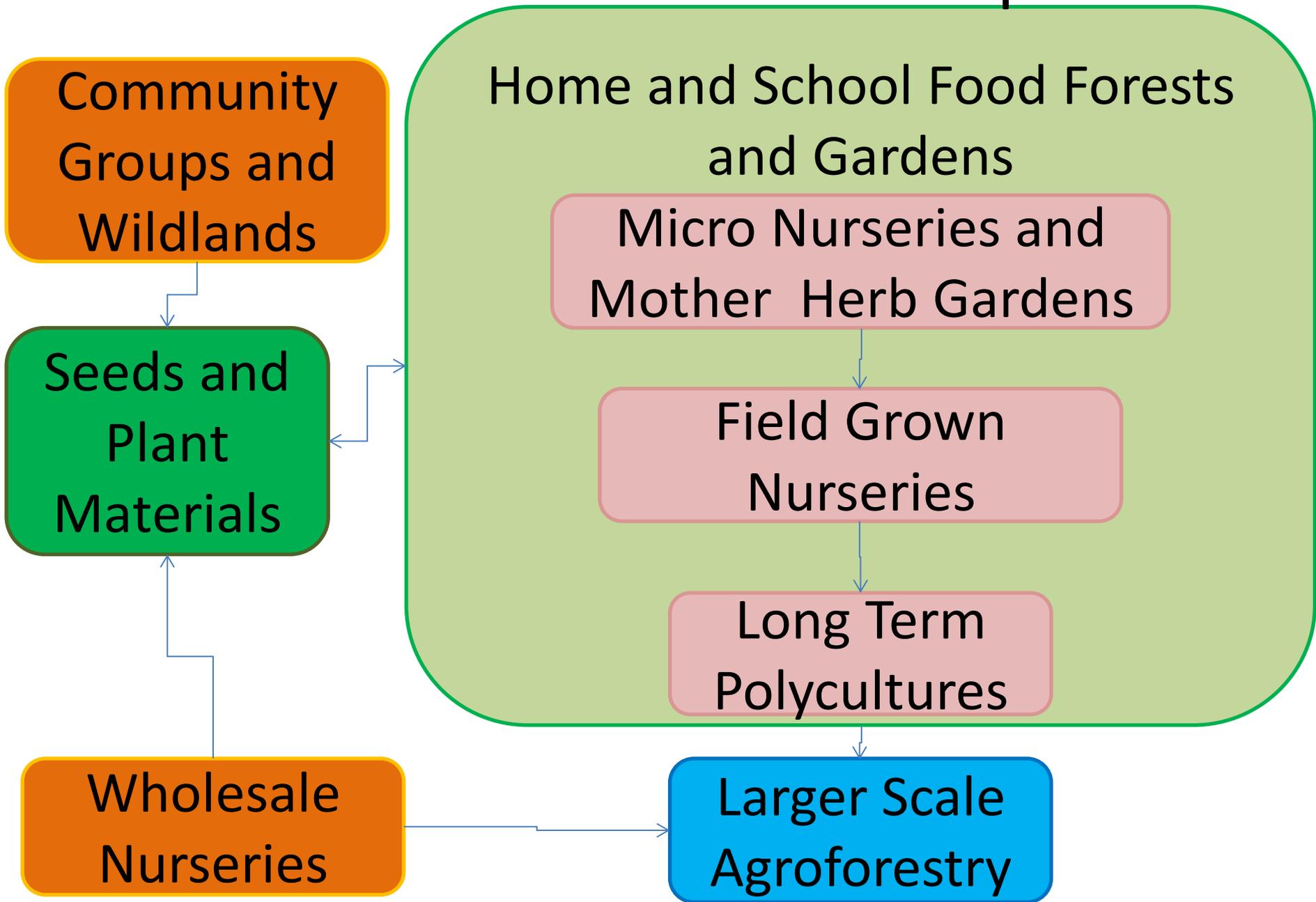
Food Forest/orchard (woody fruit and nut species)



Year 2

Food Forest/orchard (woody fruit and nut species)  
Good example of succulent groundcover under fruit tree

# Local Plant Resource Development





3- 2011      8- 2012

### Doorstep Mother Herb Garden



4- 2013



8- 2013



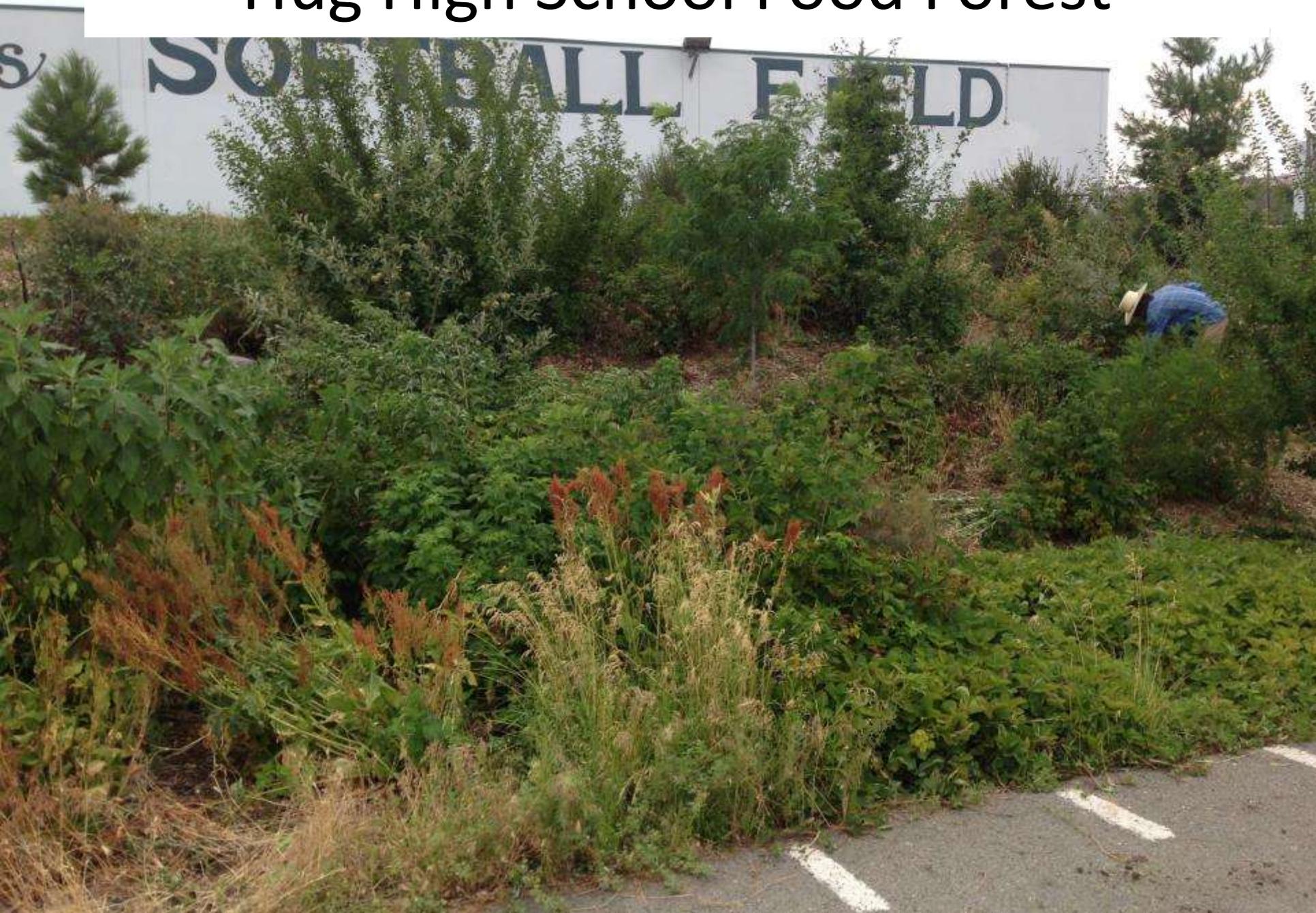
8-2013



# Hug High School Food Forest

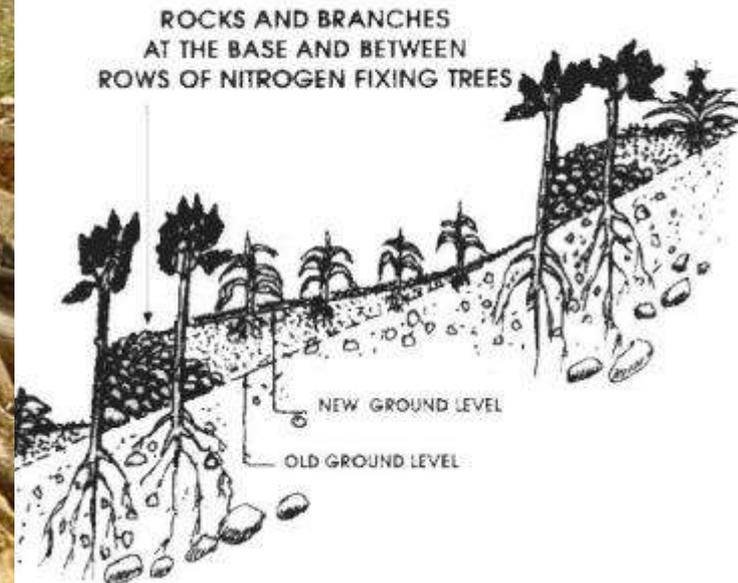


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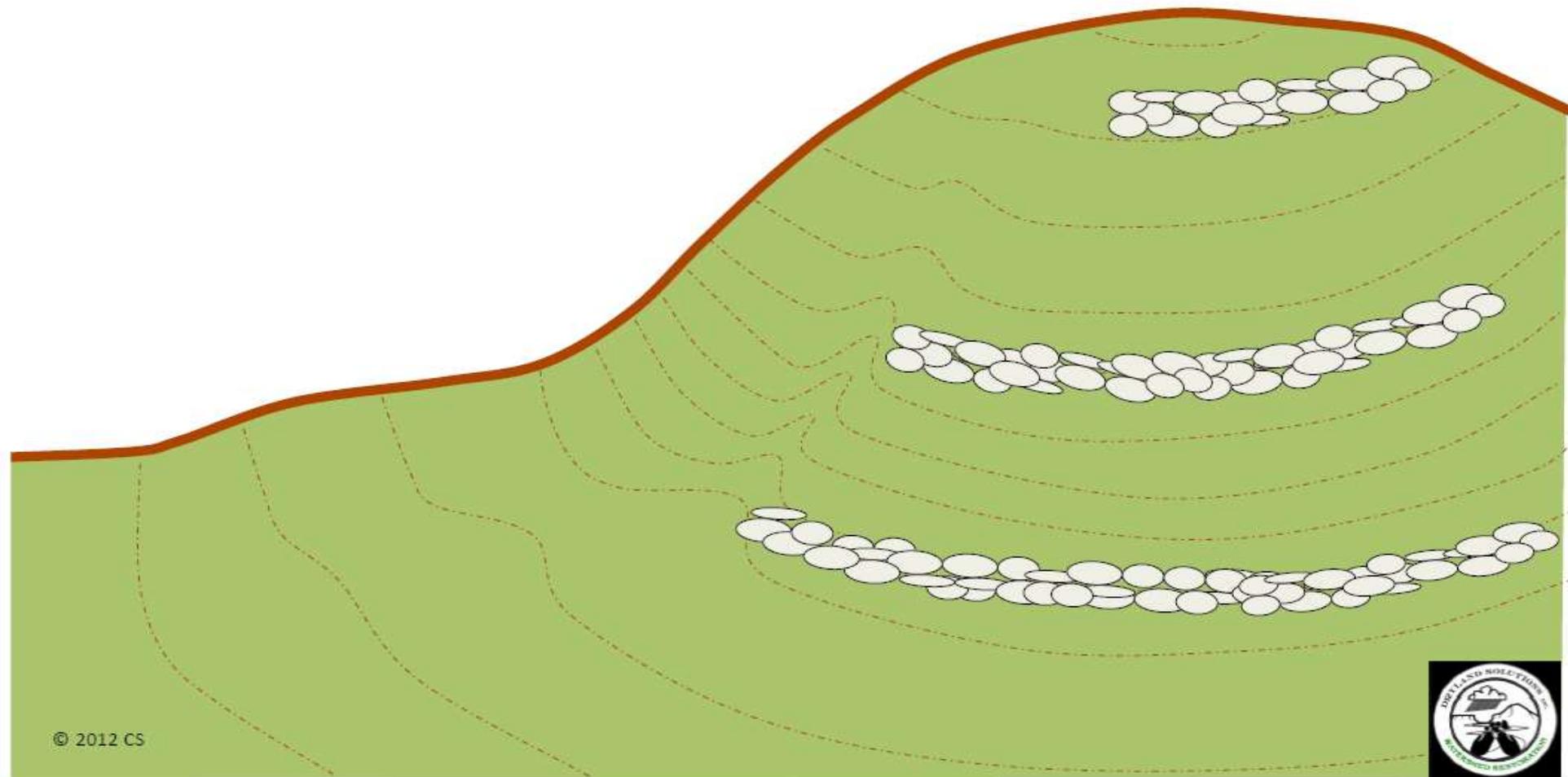


# Erosion control treatments

## Rock Mulch and Log/Brush Mulch on Contour



# Rock Mulch on Contour



© 2012 CS



Source: <http://www.watershedartisans.com/index.php>

# Rock Mulch examples



Source: <http://teca.fao.org/read/7861>



Source:

[http://commons.wikimedia.org/wiki/File:Contour\\_line\\_8\\_gener\\_2007.jpg](http://commons.wikimedia.org/wiki/File:Contour_line_8_gener_2007.jpg)



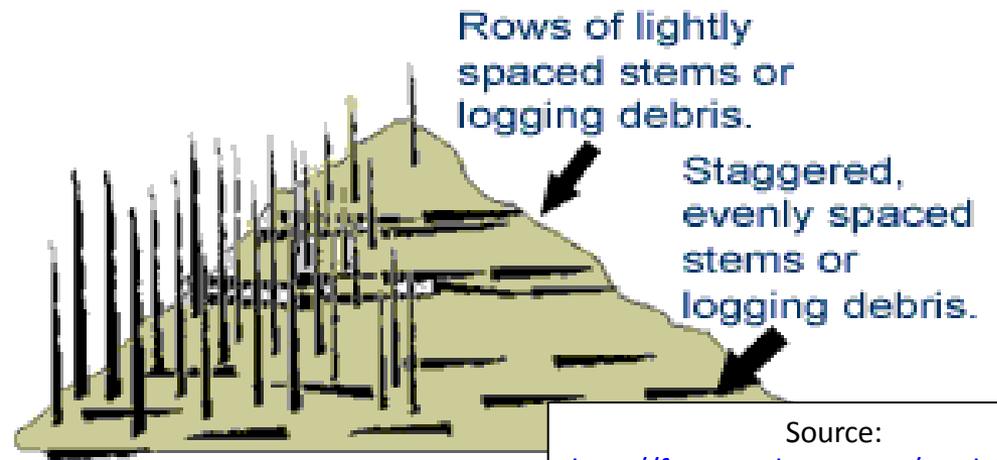
Source:

<http://www.ediblelandscapingmadeeasy.com/?s=erosion&searchsubmit>





Source: <https://www.pinterest.com/synta74/sloped-backyard-garden/>



Source:  
<http://forestandrange.org/modules/afterwildfire/tree/tree-pg5.htm>

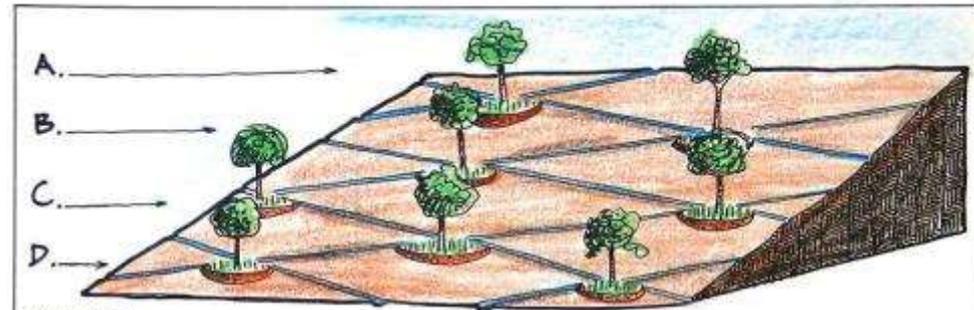


Source: <http://www.tenthacrefarm.com/2014/10/heres-a-quick-way-to-terrace-a-hill/>



Source: <http://www.gardenfood.org/2014/02/green-island-2014-part-2-contours.html>

# Net and Pan



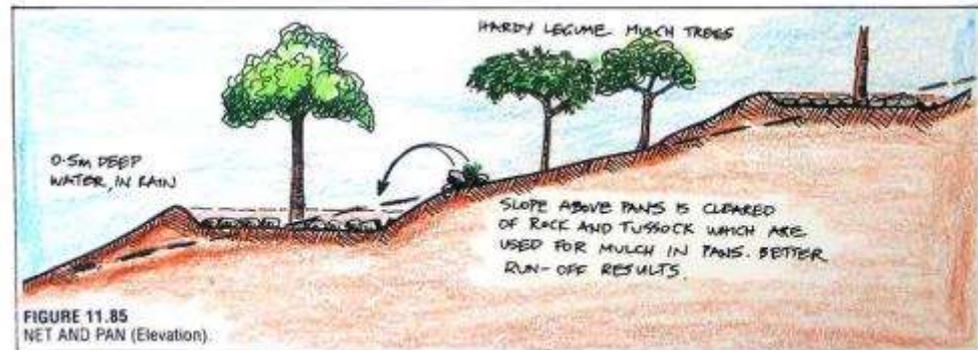
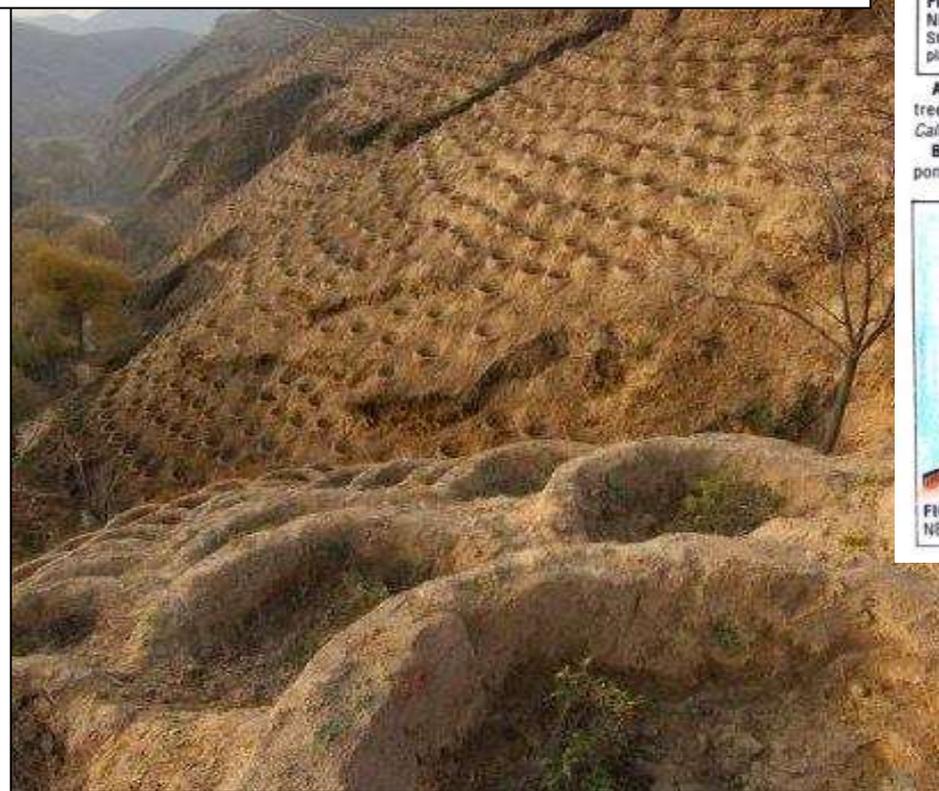
**FIGURE 11.84**  
NET AND PAN (Plan).  
Stony hillsides suit 'net and pan' tree planting; hardier trees are planted in up-slope skeletal soils, less hardy trees on lower slopes.

**A.** Crest trees: hardy needle-leaf species and narrow-leaf trees to suit thin soils, e.g. stone pine, olive, *Casuarina*, *Callitris*, *Acacia*, quandong.  
**B.** Hardy trees with known drought resistance, e.g. fig, pomegranate, *Acacia*.

**C-D.** Midslope and deeper soils suited to citrus, fig, *Acacia*, pistachio.

**E-F.** Deep base soils with some humus suited to chestnut, mulberry, raintree, citrus.

Source: <http://www.fao.org/docrep/006/y4690e/y4690e09.htm>



**FIGURE 11.85**  
NET AND PAN (Elevation).

Source: Permaculture A Designers Manual  
Note: tree species listed are not applicable for the N. Nv climate.

Source: <https://www.youtube.com/watch?v=8QUSIJ80n50>

**Path to *scarcity* in the landscape:  
Decrease available rainfall**

30-50% of the potable drinking water consumed by the average single-family household in the western U.S. is used for landscape irrigation



**Path to *abundance* in the landscape:  
Increase available rainfall**

- Rainwater is primary water source
- Greywater is secondary water source
- Municipal/well water only a supplementary source



# Infiltration basins, Bio-Retention Basins, Low Impact Development



Source: <http://www.southwesturbanhydrology.com/solutions/bio-retention-basins/>



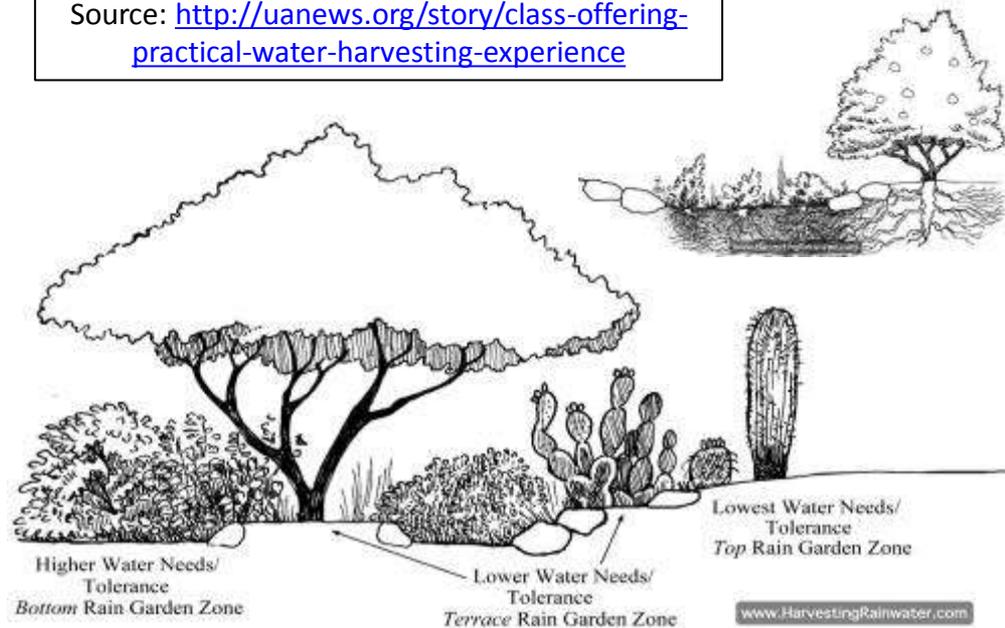
Source: <http://www.santafebotanicalgarden.org/erosion-control-and-storm-water-management-project/>



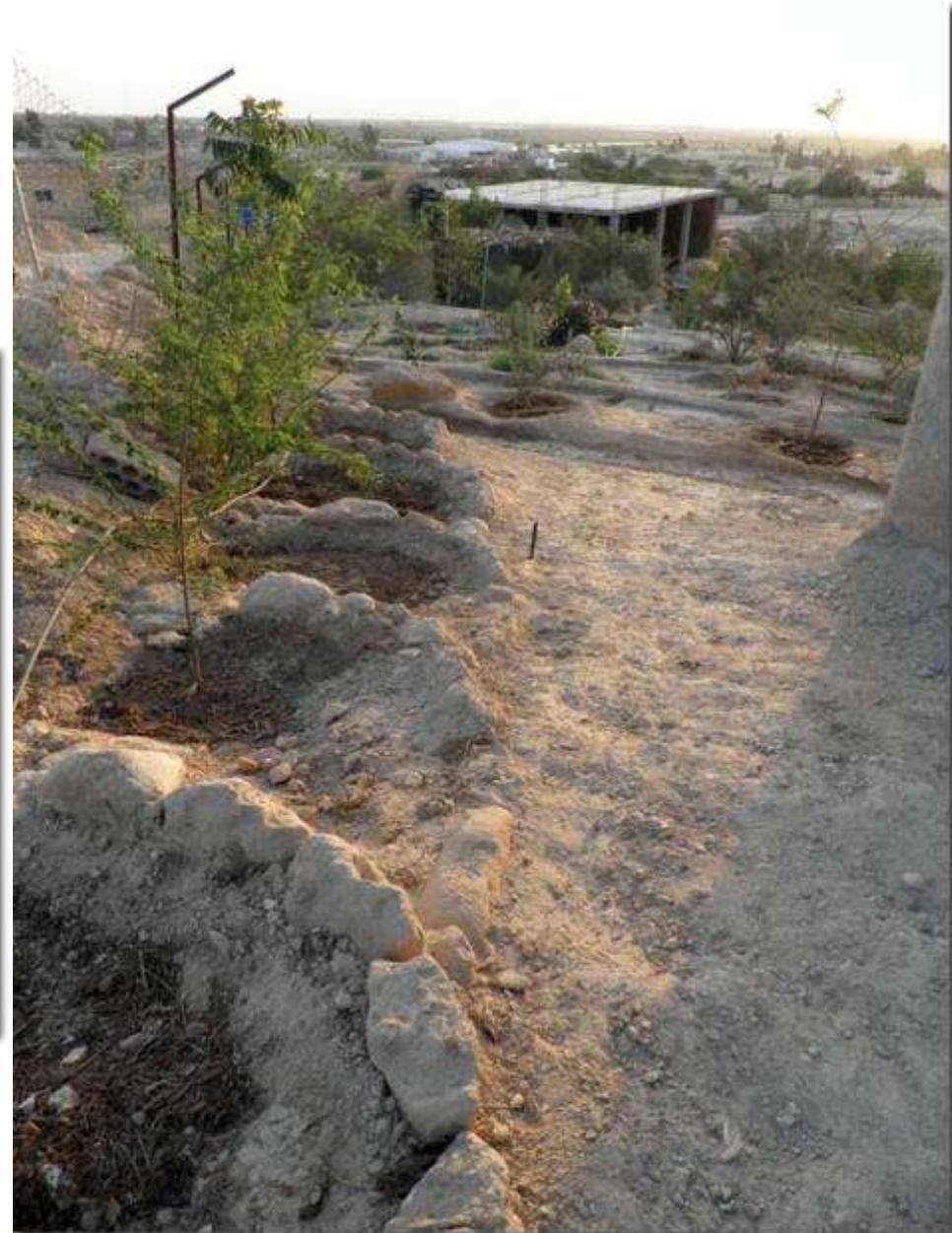
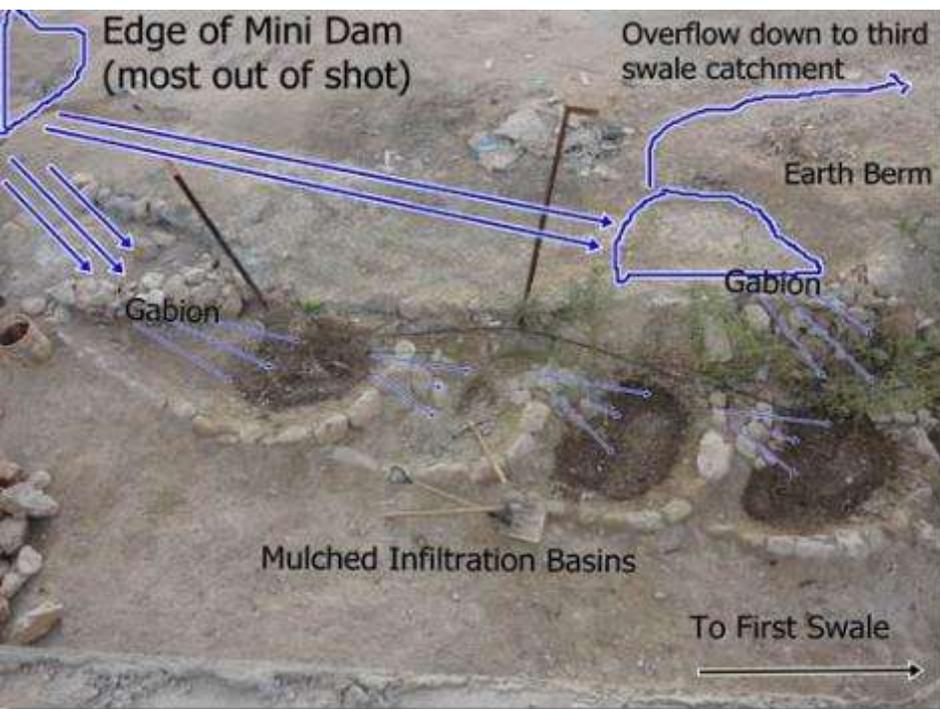
Source: <http://uanews.org/story/class-offering-practical-water-harvesting-experience>



Source: <http://www.sonorainstitute.org/where-we-work/southwest/santa-cruz-river/317-rainwater-harvesting-demonstration-site.html>



Source: <http://www.harvestingrainwater.com/2014/07/12/revised-multi-use-rain-garden-lists-for-tucson-arizona-and-a-template-for-anywhere-else/>



Source: <http://permaculturenews.org/2011/03/30/observations-and-interactions-at-the-jordan-valley-permaculture-project-aka-greening-the-desert-the-sequel/>

# Passive solar and water harvesting landscape

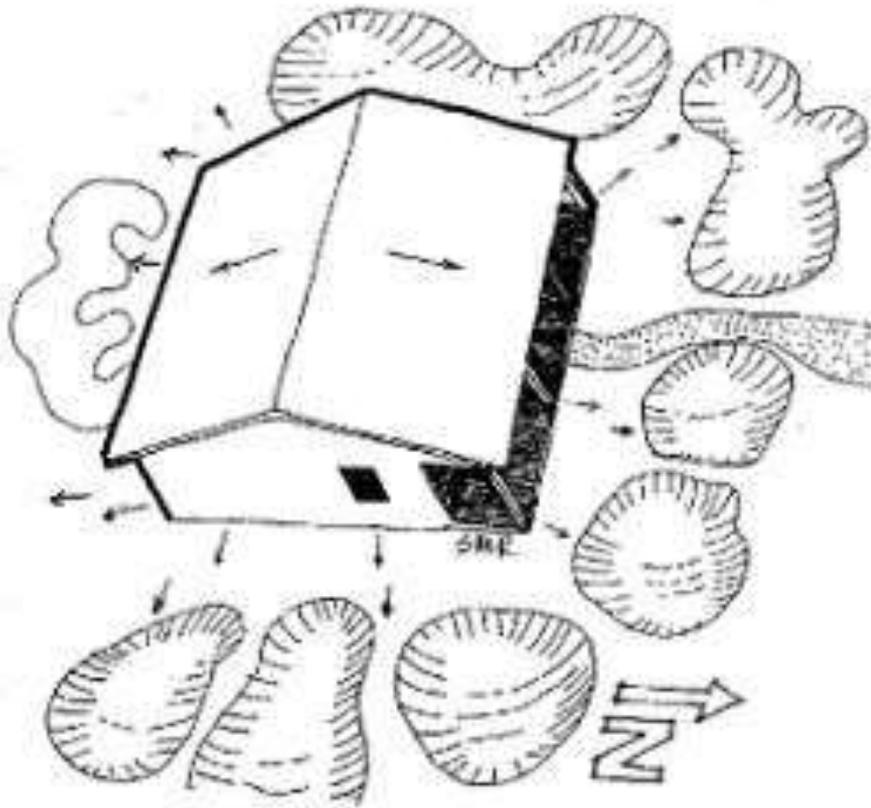


Fig. 4.11A. Water-harvesting basins placed to help grow a solar arc of trees, and one basin on the winter-sun side of the house to grow a sunken winter garden (32° latitude)

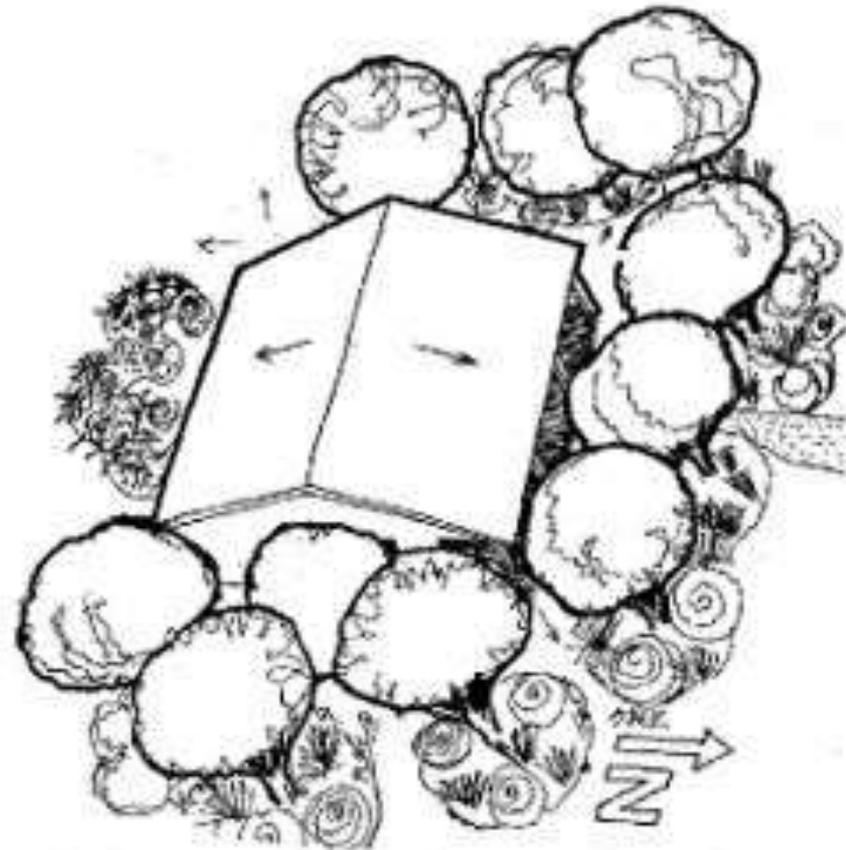


Fig. 4.11C. Trees at full size forming a living solar arc, and a thriving winter garden

# Support and Expansion

- Continued coaching and consultation to build capacity and expand efforts
- Larger scale Applications
  - Rural Road and Culvert Improvements
  - Range and livestock management practices
  - Agroforestry
  - Watershed Restoration
  - Renewable Energy
  - Beautiful Housing
  - Community Based Infrastructure

# Passive Solar Natural Building



# Cohousing subdivision in Colorado





Source: [http://www.alqueva-ibericos.com/dehesa\\_eng.html](http://www.alqueva-ibericos.com/dehesa_eng.html)

# Water Harvesting Alley Crop and Silvopasture



Source: New Forest Farm

Source: New Forest Farm  
<http://www.newforestfarm.net/>



# Community Watershed Restoration

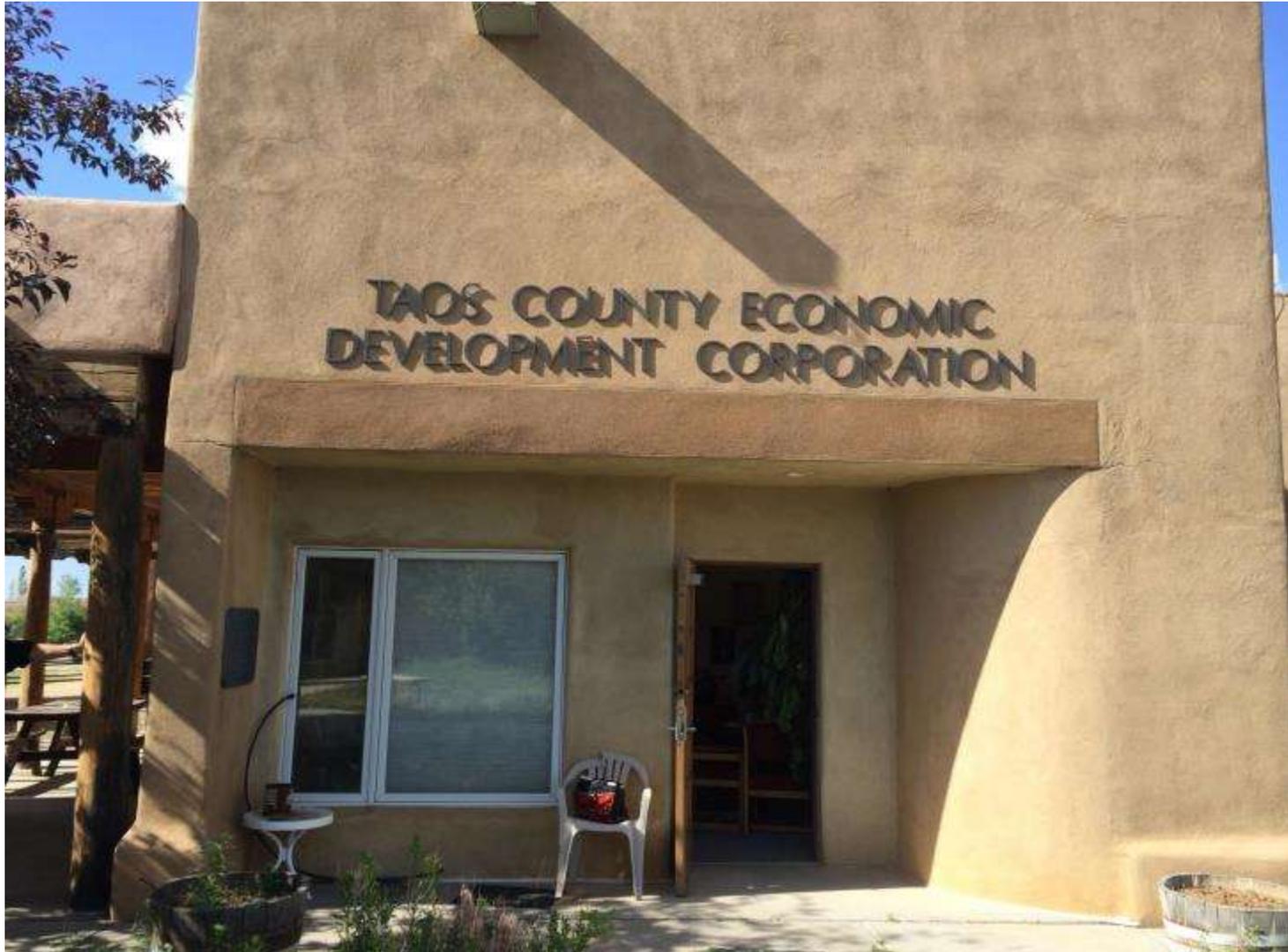






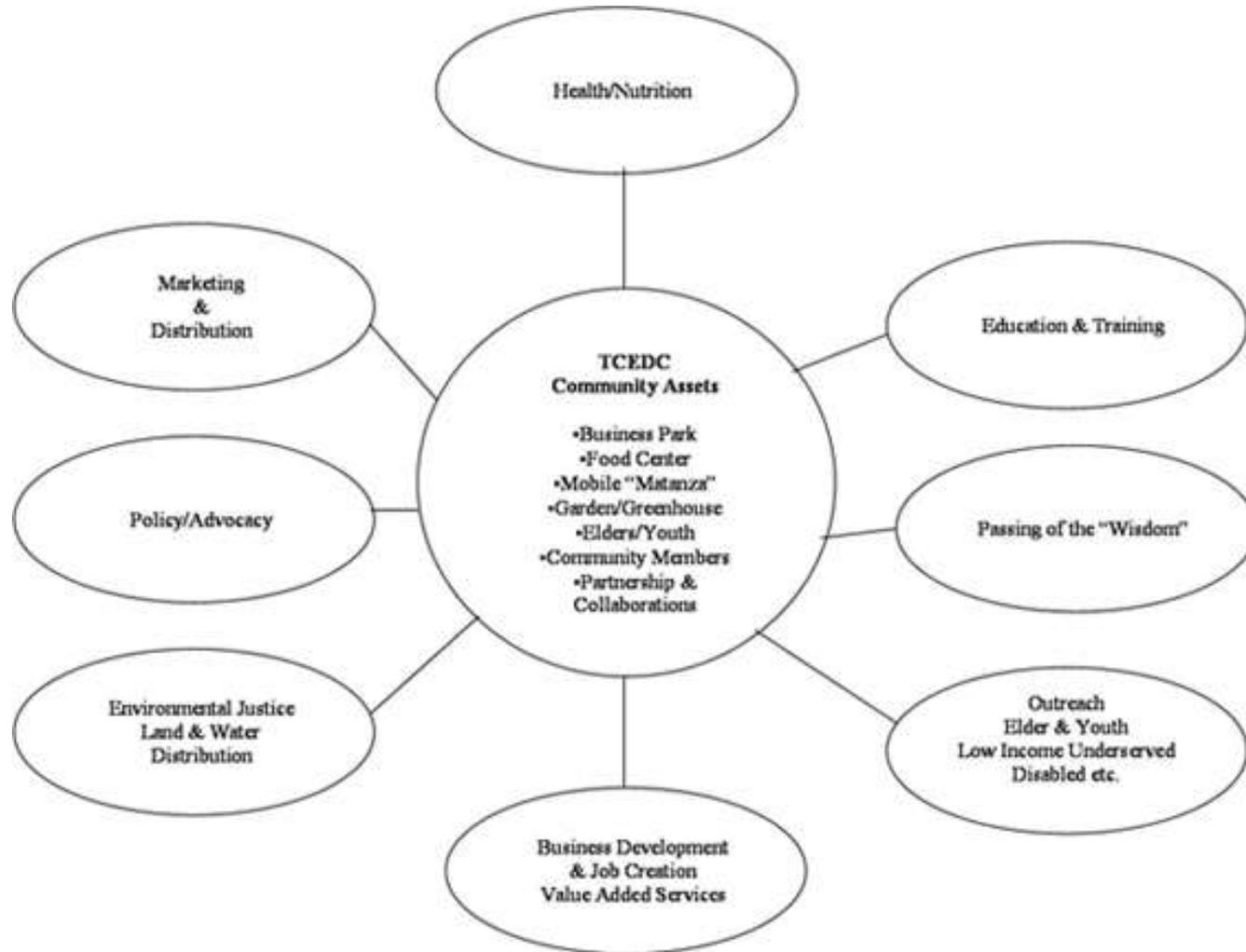


# Taos County Economic Development Company



Source: <http://www.tcedc.org/index.html>

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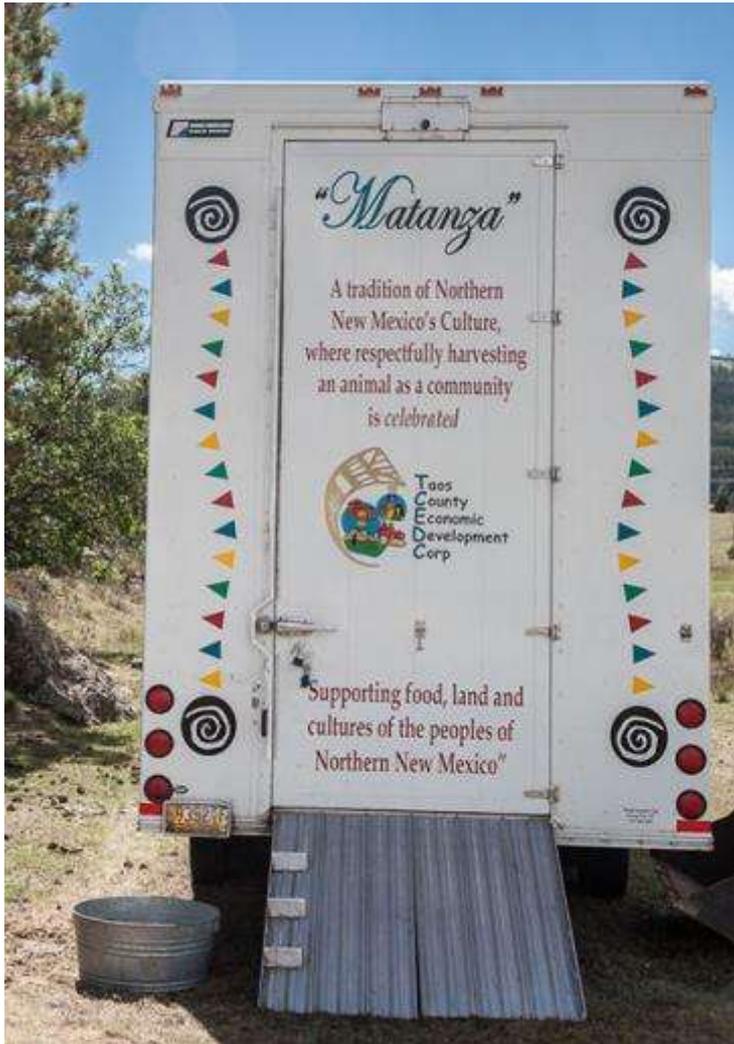


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