



# Natuculture: Urban Farming for the Future

Enhancing Urban Sustainability through the Application of Permaculture Principles

North Carolina Agricultural and Technical State University

L.Tawhid, R. Panwala, J. Evans, M. Ibrahim, G. Spangler, D. Edralin, A. Joyce, and K. Nkruman Advised by: T. Wall and M. Reyes



2010



Winner

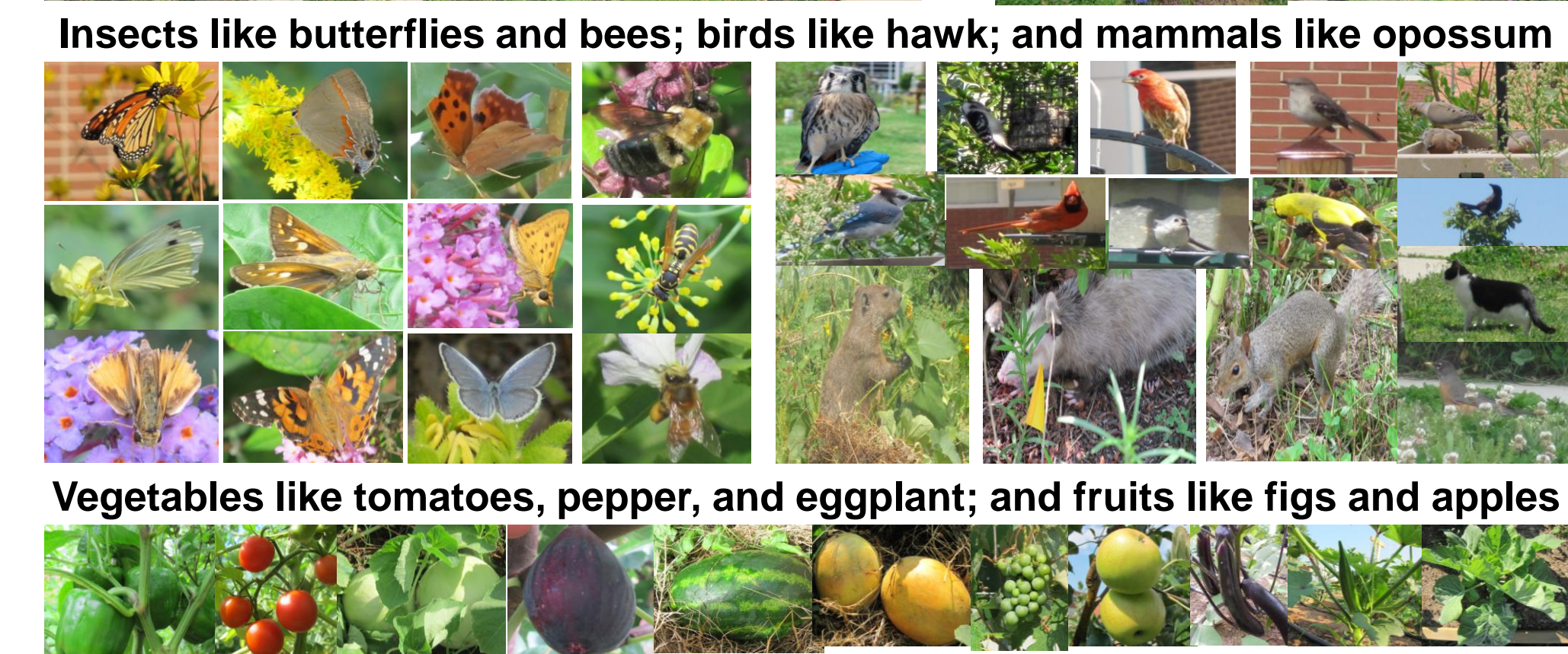
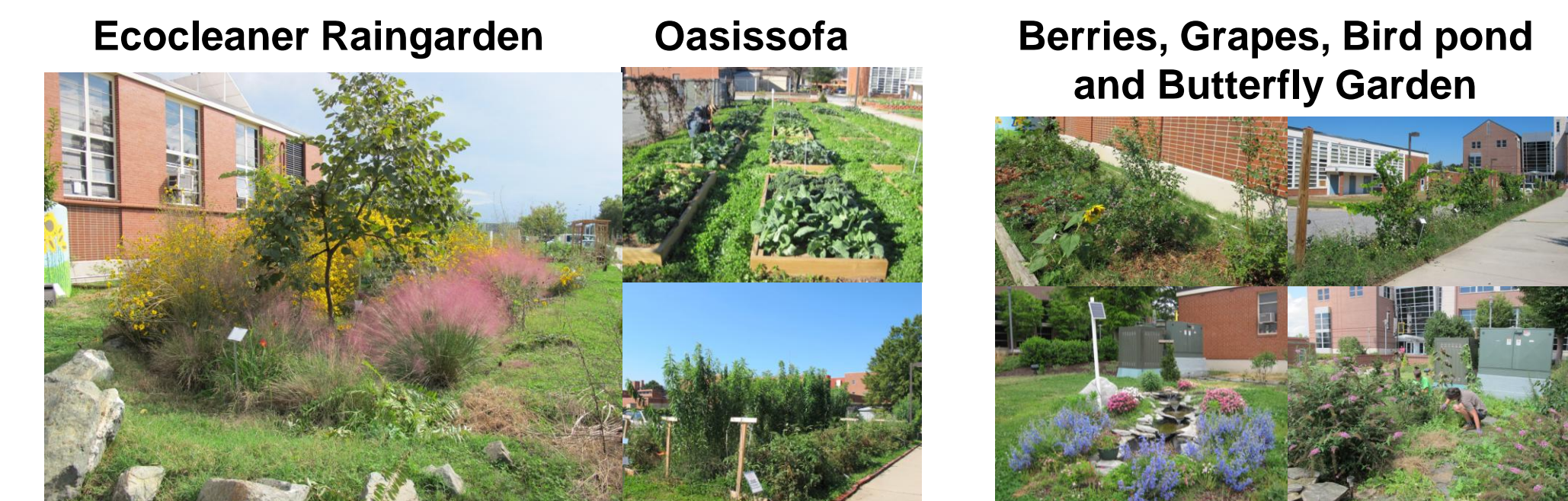


## What is Natuculture?

Natuculture (pronounced "nāychew" culture) is any human made system that mimics nature in human disturbed landscapes. Natuculture is an agroecologically balanced and biologically diverse system for food production, stormwater treatment and recreation.

## Action

We converted a lawn, a drug-addicted carpet, into a living display of a vibrant, biologically diverse, and ecologically complex food producing, water harvesting and cleaning, and carbon dioxide sequestering system with close to zero use of artificial chemicals.



## Why Urban Farming?

In the U.S.A. 30 million experience hunger regularly. In Greensboro, North Carolina, 33% of households are located in food deserts because they have no access to nutritious food and live a mile away from a grocery store.

## Action

We reached out to thirteen K-12 campuses and two communities and replaced lawns with oasissofas experiments harvesting **4500 lbs** of vegetables in summer 2013. An oasissofa is a 6 ft x 3 ft vegetable bed that is managed by mimicking a forest.



## Local, State of NC and International

## How will we begin?

Our strategy in scaling up urban farming is to involve as many stakeholders as possible, especially youth. We built oasissofa experiments in seven high schools in North Carolina, one of which is in the STEM Early College at N.C. A&T State University. With guidance from faculty, graduate and undergraduate students, high school students are experientially learning the scientific method. Below is an example of a study conducted by a biology class at STEM Early College at N.C. A&T.

### Rational

Sustainability in healthy food production has become a major issue in both rural and urban environments. The issue of nutritional starvation and global hunger are evidenced by communities having limited access to nutritious food and vegetables. The students at the STEM Early College at North Carolina Agricultural and Technical State University (STEM-EC) became interested in seeing if the new technique of 'oasissofas growing food while mimicking forest' could increase food production and its role in the overall sustainability for future generations. Since vegetables are significant sources of nutrients that the human body needs, high school students from the STEM-EC conducted an experiment on home vegetable production in urban areas. Students monitored the height and yield of collards grown from the treatments below.

### Treatments

- Tilled : turning over of soil during planting and maintenance.
- No-till: directly planting transplants without growing cover crops.
- Oasissofa Summer: Cover crops grown during the summer time. The vegetable transplants are directly planted on the residues of cover-crops mid fall.

### Results

Yield of collards per treatment were weighed. Figure 1 shows the average yield of collards per treatment. It shows that the average yield of oasissofa were lower than no-till and tilled. However, the height data shows greater height on collards under oasissofas shown in Figure 2.

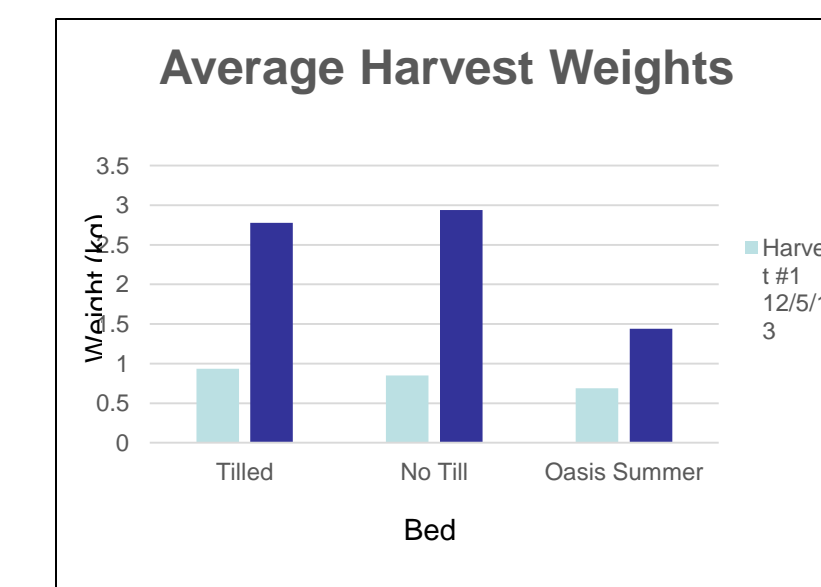
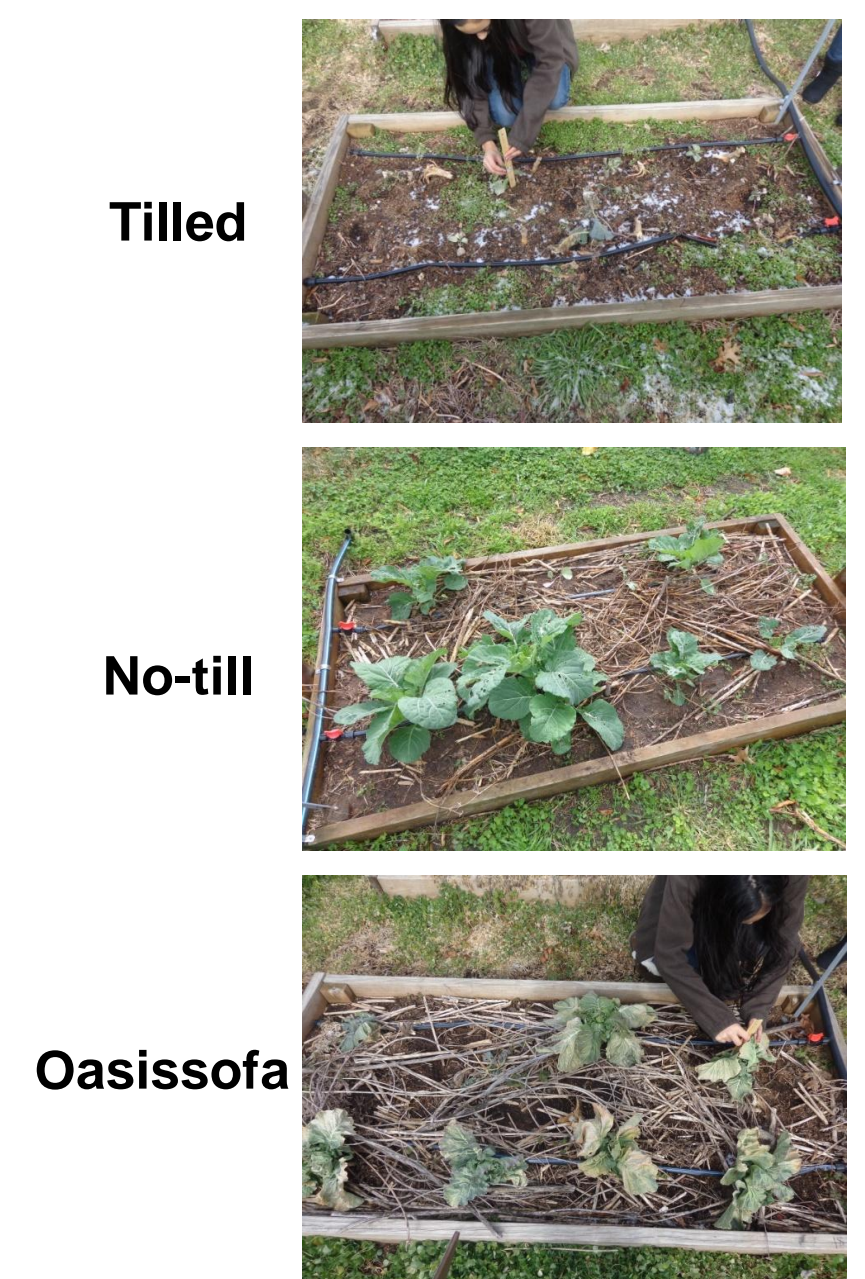


Figure 1. Average Yield of Collards

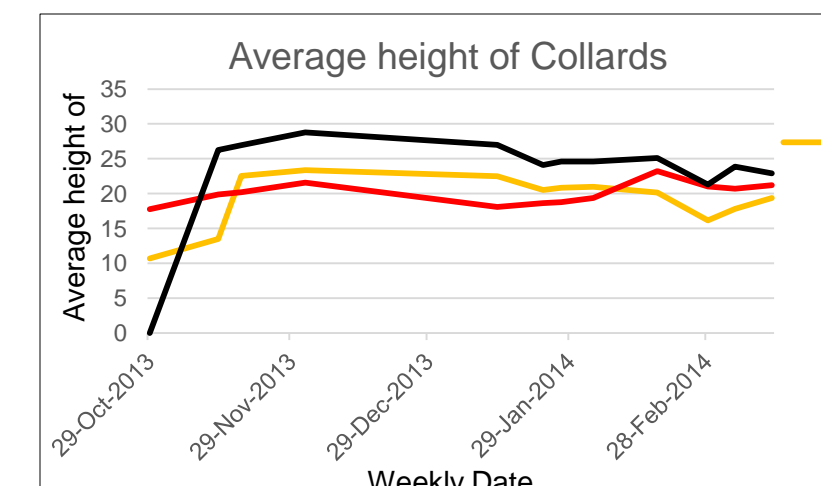


Figure 2. Average height of collards

### Conclusion

The yield of collard greens under oasissofa summer showed lesser yield than tilled and no-till. Adjustments have to be made in order to lessen possible competition effects between the regrowth of cover crops. Fertilizer either by organic and inorganic methods application must also be enhanced to offset possible immobilization of needed nutrients by soil microbes from previous cover crops. Nonetheless, it is important to note that no-till had almost similar yield than tilled. This goes to show that tilling can be omitted in this type of vegetable production.



Three 'MCD' principles of conservation agriculture namely: M – minimum soil disturbance which involves no tillage; C – continuous mulch which involves growing fertilizer producing mulch in the site and not bringing the mulch to the site; and D – diverse species which involves spatially planting different species at various cropping cycles. The bed is the size of a sofa symbolically discouraging being a couch potato on a sofa by going outside to the oasis sofas. The bed is called an oasis, because many households due to lack of fresh, nutritious and artificial chemical free produce in diets are home deserts symbolically needful of an oasis. Oasissofas mimic a forest since 'MCD' are fundamental attributes of a forest.

