Urban Agroforestry – extending the tree canopy over our communities



Kristin Ramstad Community Assistance Forester OR Dept of Forestry October 22, 2014

With appreciation to
Gary Bentrup, Research Landscape
Planner
U.S. Forest Service, Research &
Development
USDA National Agroforestry Center,
Lincoln, NE

Presentation Objectives

 Appreciation of how urban agroforestry can complement UF efforts in cities
 Understanding of the ways that urban agroforestry (UAF) tends to differ from traditional agroforestry

- ↑ Understanding of the "drivers" of the urban food movement
- Familiarity with different types of UAF

Appreciation of the ways UAF approaches can increase resiliency in communities
 Understanding of the strengths in and obstacles to sustaining urban agroforestry efforts in cities

Urban Forestry...

- Urban forestry is an integrated, city wide approach to the planting, care and management of trees in the city to secure multiple environmental and social benefits for urban dwellers.
 - Robert Miller, UF Professor, U Wisconsin-Stevens Point

The art and science of helping trees <u>and people</u> get along in "built" environments.

Urban Agroforestry^{*} = a series of strategies that increase the effectiveness of urban forest management by encouraging positive person-person and human-plant interaction, and potentially alleviating food insecurity in communities.

*and related terms

Agroforestry-realizing some synergies





Agroforestry - The intentional integration of trees and/or shrubs into crop and animal production systems. AF provides tree-based ecosystem services in agricultural environment.

Urban forestry – The intentional integration of trees on urbanized land. UF provides tree-based ecosystem services in a built environment.

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Compare and Contrast AF and UAF

ScaleLarge vs Small?

Ownership/Jurisdictions Private vs Public







Demographics





Urban Population

Over 80% U.S. population lives in a metropolitan area





U.S. produce travels an estimated 1,500 miles • *Pirog 2003*

Estimated 36% of fruit and vegetables loss due to spoilage
 FAO 2011

Urban Agriculture – Is it significant?

- 30% of food worldwide is grown in cities UN 2005
- 29% ↑ in food gardening among U.S. urban households from 7 m to 9 m NGA 2014
- 39% of U.S. farms located in metro areas

• 40% of the value of U.S agricultural production USDA ERS 2010



Image by Laura Berman
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What does UA/UAF have to offer?

Food security/fresh foodJobs

> Waste to resource
> Reuse of vacant lands
> Physical activity
> Community connections
> Biological habitat



Image by UC Davis



Food Security

"Access by all people at all times to enough food for an active healthy life." USDA

 ▶ 49.0 million people lived in foodinsecure households

8.3 million children lived in foodinsecure households

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U.S. households by food security status, 2012



Source: Calculated by ERS using data from the December 2012 Current Population Survey Food Security Supplement.

Trends in prevalence rates of food insecurity and very low food security in U.S. households, 1995-2012



Drivers for Urban Agriculture



Sustainable production

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Source: University of Michigan http://css.snre.umich.edu/css_doc/CSSo1-o6.pdf

Drivers for Urban Agriculture Food security Sustainable production Connectedness with food production Food quality

Drivers for Urban Forestry

 Community Livability; Interpersonal Connections; Health

Need for Low Impact
 Development

Tree Canopy Quality

Misc. Tree Products from a PNW Urban Forest ♦ Fruits – e.g., tree fruits, persimmons ♦ Nuts – walnuts, chestnuts, filberts Culinary herbs - Oregon myrtle, Tilia tea Pollen – for allergy medications Nectar/Honey - tulip poplars, black locust



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Direct Benefits

- Widen the variety of fresh food in the diet, especially berries, nuts, fruit and leaves
- Microclimate modification
- Water, air, and soil quality services
- Biological pest control
- Pollination services
- Phytoremediation
- Extreme weather adaptation

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Urban Agroforestry

Indirect Benefits

Reduce packaging Reduce food miles Promote biodiversity Low Inputs Encourage a more active lifestyle, which combats obesity and depression

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Urban Agroforestry

Examples of Urban Agroforestry

Public Options

Edible Forests/Community Orchards School Gardens Gleaning/Foraging

Private options

Yards – Garden Forest Specialized Development

From the silvo-pastoral presentation: *"intentional, intensive, integrated, interactive"*

Food Forests = Permaculture= Edible Forest Gardens = Urban/Community Agroforestry

- A **food forest** is a gardening technique or land management system, which **mimics a woodland ecosystem** by substituting edible trees, shrubs, perennials and annuals. Fruit and nut trees make up the upper level, while berry shrubs, edible perennials and annuals make up the lower levels. (Beacon Hill FF website)
- Edible forest gardening is the art and science of *putting plants* together in woodlandlike patterns that forge mutually beneficial relationships, creating a garden ecosystem that is more than the sum of its parts. You can grow fruits, nuts, vegetables, herbs, mushrooms, other useful plants, and animals in a way that mimics natural ecosystems. You can create a beautiful, diverse, high-yield garden. If designed with care and deep understanding of ecosystem function, you can also design a garden that is largely self-maintaining. (Edible Forest Gardening website)

Public Agroforestry

 Grown in true public space (parks, plazas, streets);

2. The food must be freely available to all members of the public; and

3. The garden is permitted, funded, and/or maintained by public officials, as part of a public policy to improve the diets of citizens THE NEW URBAN AGRICULTURE

PUBLIC

Produce

Darrin Nordahl

Beacon Hill Food Forest





Seattle, WA Phase 1 under construction 1.75 ac test - 7 ac in future

Edible arboretum Berry patch Orchards Nut grove "The goal of the Beacon Food Forest is to design, plant and grow an edible urban forest garden that inspires our community to gather together, grow our own food and rehabilitate our local ecosystem." - webpage

http://beaconfoodforest.weebly.com/index.html

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Urban Forest Foraging

Baltimore Case Study 103 products – 78 species

44 edible products

\$4 to \$100 per tree value

Philadelphia Case Study 74 products – 70 species





Urban Forest Foraging

Urban Edibles () Search by Lin =

← → C 🗋 urbanedbles.org/tes

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USDA

United States Department of Agriculture Forest Service Pacific Northwest Research Station General Technical Repor PNW-GTR-849 February 2012 **U**AS

Gathering in the City: An Annotated Bibliography and Review of the Literature About Human-Plant Interactions in Urban Ecosystems

R.J. McLain, K. MacFarland, L. Brody, J. Hebert, P. Hurley, M. Poe, L.P. Buttolph, N. Gabriel, M. Dzuna, M.R. Emery, and S. Charnley



www.fs.fed.us/pnw/pubs/pnw_gtr849.pdf



www.phillyorchards.org/ www.fallenfruit.org/ urbanedibles.org/

🔮 Urban Edibles :: Sear...

Slide credit – G Bentrup

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Forest Home Gardens

Origins in the Tropics

Suitable for Temperate Regions

I. CANOPY (LARGE FRUIT & NUT TREES) 2. LOW TREE LAYER (DWARF FRUIT TREES) 3. SHRUG LAYER (CURRANTS & BERRIES) 4. HERBACEOUS (COMFREYS, BEETS, HERBS) 5. RHIZOS PHERE (ROOT VEGETABLES) 6. SOIL SURFACE (GROUND COVER, EG, STRAWBERRY, ETC) 7. VERTICAL LAYER (CLIMBERS, VINES) 0. (CLIMBERS, VINES)

HE FOREST GARDEN: A SEVEN LEVEL BENEFICIAL GUILD

http://www.edibleforestgardens.com/

Village Homes



Davis, CA Built in 1975 70 ac subdivision -225 homes 23 ac in orchards, vineyards, edible gardens, greenbelt

www.villagehomesdavis.org/home



Village Homes

Household Common

Agricultural Commons Garden plots (Private use)

Orchards and vineyards (Public use)

Almond orchard (cash flow) Residents produce about 25% of their household fruit and vegetable consumption

www.villagehomesdavis.org/home lda.ucdavis.edu/people/websites/francis/vh.pdf



Resiliency Attributes in UAF systems

- Diversity people and plants; different species, schedules, needs, ideas, ages... plot size, acreage, soil
 - Commitment and energy levels also have life-spans
- Water?
- Shared Values: Collaboration, Self-sufficiency, Friendship, Creativity, Self-Concept as a neighborhood/community/school/city
- Social Media easier to communicate, engage, and include
- Potential profit making?
- Occasional government/ngo/non-profit support

Sustainability Challenges in UAF Systems

Lack of city/government support

Conflicting regulations (cities)

- Conflicting expectations (volunteers/coordinators)
- Weeds perception and control
- Lack of "horticultural sophistication"
- Inability to turn yard waste into compost/mulch
- Too many demands on time
- Charismatic leaders that leave

• Water?

Public land use priorities/availability/conflicts

Lack of infrastructure for processing/using produce
"Tragedy of the Commons"

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