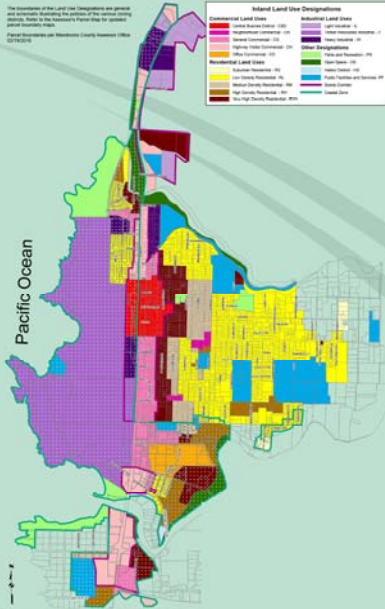




GARDEN ASSESSMENT MAP FORT BRAGG, CALIFORNIA

Assessing the potential for home and community gardens to promote healthy ecosystems, sustainability and resilience in our community.

LAND USE DESIGNATION CITY OF FORT BRAGG



PURPOSE:

A sustainable community has its roots in local food production. Biologically intensive, home and community gardens are highly productive in their ability to grow food, fix atmospheric carbon and reduce resource need in agriculture. Additionally, gardens are therapeutic, enhance our neighborhoods and encourage public health. This project attempts to quantify the potential for home and community gardens to contribute to a vibrant and sustainable community.

GOALS:

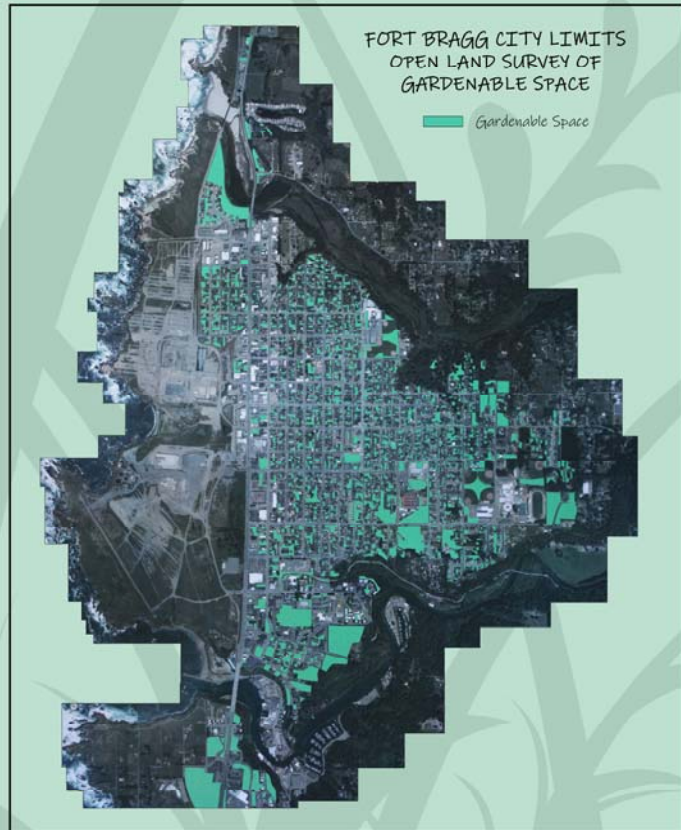
- To estimate open land within city limits
- To develop a sample garden cropping pattern to serve as a basis for production value
- To determine potential for gardens on these lands to provide food, fix carbon and reduce resource need

GARDENABLE SPACE WITHIN FORT BRAGG CITY LIMITS

Land-Use Designation	Gardenable Space*
Central Business District	39,375 Sq Ft
Neighborhood Commercial	7,500 Sq Ft
General Commercial	106,250 Sq Ft
Highway Visitor Commercial	261,875 Sq Ft
Office Commercial	92,500 Sq Ft
Heavy Industrial	0 Sq Ft
Light Industrial	0 Sq Ft
Timber Resource Industrial	0 Sq Ft
Parks and Recreation	2,500 Sq Ft
Open Space	0 Sq Ft
Harbor District	0 Sq Ft
Public Facilities and Services	181,875 Sq Ft
Suburban Residential	0 Sq Ft
Low Density Residential	915,000 Sq Ft
Medium Density Residential	112,500 Sq Ft
High Density Residential	168,750 Sq Ft
Very High Density Residential	252,500 Sq Ft

TOTAL GARDENABLE SPACE 2,140,625 Sq Ft

*The 100 ft wide, paved parks, industrial, commercial or otherwise should be incorporated into open space was not included



METHODOLOGY:

- Determining Gardenable Areas:
 - Map: A large-format 3'x4' map of Fort Bragg, CA was printed out using a high resolution file obtained from the City of Fort Bragg
 - A higher resolution digital image was referenced to increase accuracy in determining green space
 - Open green spaces were subtracted from the map and arranged according to their land use designation
 - Total square-foot space was measured for subtracted zoned areas and a conservative estimate of 45% of total land was assumed unsuitable for growing based on shade and other factors
- Determining a Basic Garden Plan and Yields:
 - A sample garden bed measuring 100 Sq Ft was developed based on crops well-suited to the growing climate and soils of Fort Bragg, CA
 - 64 crops were analyzed for their carbon and caloric yield potentials based on basic, intermediate and advanced-level yield data taken from the research of Ecology Action and Victory Gardens for Peace. This data can be found in the Master Charts of John Jeavons' book How to Grow More Vegetables 9th ed. Sample Methodology:

Plant	Calories/lb	Edible Yields (lbs)/100sqft			Total Calories Produced			Total Biomass (lbs)/100sqft		
		Basic	Interm.	Adv.	Basic	Interm.	Adv.	Basic	Interm.	Adv.
Potatoes	349	100	200	780	34,900	69,800	272,220	-	-	-
Quinoa	1600	6	13	26	9,600	20,800	41,600	18	39	78

- From these crops, a cropping plan growing 60% of the area in weight efficient caloric and carbon crops, 30% in area efficient caloric crops and 10% in fruit and vegetable crops was developed.

Vegetable Category	Area (sqft)	Calories per Average Planting			Biomass (lb) Production per Average Planting			Compost Produced at Interm. Yields (sqft)
		Basic	Interm.	Adv.	Basic	Interm.	Adv.	
Fruit and Vegetable Crops	10	964.5	2046.4	3586.6	0.2	0.3	0.6	0.01
Area Efficient Caloric Crops	30	10647.0	24504.3	58081.8	0.9	1.8	3.9	0.06
Weight Efficient Caloric and Carbon Fixing Crops	60	4807.8	9772.2	16252.2	4.6	20.4	45	0.63
Total	100	16419.3	36322.9	79920.6	10.7	22.5	49.5	0.75

RESULTS:

	Caloric Production/Sq Ft			Biomass Production/Sq Ft		
	Basic	Interm.	Adv.	Basic	Interm.	Adv.
Average	164.2	363.2	779.2	0.1	0.2	0.5
3-Crop Plan						
Potatoes (Serial)	349.0	698.0	2722.0	-	-	-
Barley	79.2	158.3	379.9	0.1	0.3	0.7
FAVA (Compost)	-	-	-	0.1	0.1	0.2
Total	428.2	856.3	3101.9	0.2	0.4	0.9

Total Gardenable Land	Cropping	Yield	Total Calories	Calories per Person per Year	Annual Persons Sustained	Total Biomass (lbs.)	Total Carbon Fixed (lbs.) *
2,140,625 Sq. Ft	1-Crop/Year	Basic	351,420,625	730,000	481	214,063	64,219
		Intermediate	777,475,000	730,000	1,065	428,125	128,438
		Advanced	1,667,975,000	730,000	2,285	1,070,313	321,094
	3-Crop Plan	Basic	416,615,625	730,000	1,256	428,125	128,438
		Intermediate	1,833,017,188	730,000	2,511	856,250	256,875
		Advanced	6,640,004,668	730,000	9,046	1,926,563	577,664

*Assuming dry weight yields are 50% Carbon, and a conservative estimate of 13% added after cold composting. This does not factor carbon offset by becoming a food and soil producer instead of a consumer in the globalized food system. A conservative estimate of an average American dietary carbon footprint is 4,000 lbs. of CO₂ annually. By becoming a producer, rather than a consumer and growing in the 60/30/10 ratio of garden planning, it is possible to keep those 4,000 lbs. in the ground while also fixing a significant amount of carbon.

PROPORTIONAL EQUIVALENCE OF GARDENABLE AREAS WITHIN LAND USE DESIGNATION

