



Growing Calories: A Community Resource Ensuring Food Security in Coastal Climates.

Victory Garden for Peace. Mendocino, CA

Growing Calories and How It Relates to Food Security?

The following document is intended to create awareness around the growing global crisis regarding food security while offering encouragement, guidance and information with pursuit towards building resilient and sustainable community food systems specific to the coastal climates of Northern California.

Often times when we think about gardening and local food production, our minds go to our beloved vegetable crops; kale, lettuce, broccoli, carrots, etc. Backyard gardeners and farmers market stands tend to dominate the scene with beaming, bright fruits and veggies. While these crops are important in our diets, when we consider food security and meeting daily caloric requirements, how many of us would survive solely off of our favored vegetable crops?

The United Nations' Committee on World Food Security, defines *food security* as “all people, at all times, having physical, social, and economic access to sufficient, safe, and nutritious food that meets their food preferences and dietary needs for an active and healthy life.”¹ While it's clear that there are many different components to food security and human health, without sufficient calories the result is undernourishment.² This fact makes the consideration of calories an essential piece of the local food security puzzle. According to the USDA, the total number of calories a person needs each day varies depending on a number of factors, including the person's **age, sex, height, weight, and level of physical activity**. Estimates range from 2,000 calories per day for adult women and 2,500 calories per day for adult men.³

We can anticipate food security to be further compromised and threatened in coming decades due to a changing climate, growing global population, rising food prices, and environmental stressors. Now, in the year 2020, we have already begun to see these pressures arise during the current pandemic which has resulted in disrupted economy and an increased need for access to food.⁴ Local and sustainable food production can help—expanding our focus on growing dietary staples in conjunction with vitamin and mineral rich fruits and vegetables can improve personal and community resiliency.

Why are vegetable crops insufficient in terms of being food secure?

Often times, the crops grown in backyards, community gardens and local farms are insufficient at meeting our daily caloric needs. Carrots, for example, contain 195 calories per pound, requiring us to eat over 12 pounds to meet our daily calorie needs.⁵ While carrots provide key vitamins and minerals needed for daily nutrition, unless your Bugs Bunny, sorry doc but no sane person can eat over 12 pounds of carrots in a day to meet their nutritional requirements. The average person can only fit around 3-6 lbs of food in their stomachs. Balance is key to meeting our nutritional needs.

What type of crops can we start growing to ensure caloric needs are met?

Keep a mental or physical food diary for a week or two can be a simple and valuable exercise. Tracking what you consume can give relevant insight as to what foods are most prevalent in your daily life, and how much of each food you consume to meet your nutritional needs. Climate is a foundational factor in determining which crops to grow. Although we all love our avocados, sweet potatoes and other warmer weather crops, understanding your growing conditions is an extremely important consideration in working towards food security.

The following table is a resource we hope you will utilize when planning your crops for the coming seasons. The compiled table serves the function of comparing crops that grow well locally in terms of how **area and weight efficient** they are at producing calories. Whether you're a fulltime farmer or a backyard gardener, these crops can be grown in many of the various microclimates on the coast, some of which may require a greenhouse or mini-greenhouse depending on your condition.

Weight and Area Efficiencies of Coastal Crops:

- “*Weight Efficient Calorie Crops*” offer a high amount of calories per lb of food consumed like quinoa (1600 calories per lb!)
- “*Area Efficient Calorie Crops*” produce a high yield of calories per unit of time and space like potatoes (69,800 calories per 100 sqft bed!)

Crop	Calories per Lb	Intermediate Yield per 100 sqft Bed ¹ (Lbs)	Calories Produced per 100 sqft Bed	Number of Beds Grown for Yearly Calories ²	Lbs to Eat for Total Daily Calories ³
Apples	242	75	18,150	49	9.9
Artichoke	213	75	15,975	55	11.3
Asparagus	104	19	1,976	444	23.1
Barley	1,579	10	15,790	56	1.5
Beans, Runner	141	35	4,935	178	17.1
Beans, Dry	1,542	10	15,420	57	1.6
Beets, Cylindra	195	220	42,900	21	12.3
Broccoli	127	39	4,953	177	18.9
Brussels Sprouts	195	106	20,670	43	12.3
Cabbage	113	191	21,583	41	21.2
Carrots	195	150	29,250	30	12.3
Cauliflower	113	100	11,300	78	21.2
Celery	73	480	35,040	25	32.9
Chard	86	405	34,830	26	27.9
Collards	136	191	25,976	34	17.6
Corn (Flour)	1,656	17	28,152	32	1.5
Corn (Sweet)	400	34	13,600	65	6.0
Cucumbers	59	316	18,644	47	40.7
Fava Beans	1,579	9	14,211	62	1.5
Garlic	676	120	81,120	11	3.6
Jerusalem Artichokes	345	206	71,070	13	7.0
Kale	227	114	25,878	34	10.6
Kohlrabi	122	135	16,470	54	19.7
Leeks	277	480	132,960	7	8.7
Lettuce	82	202	16,564	53	29.3
Mustard	118	225	26,550	33	20.3
Onions	172	200	34,400	26	14.0
Parsley	163	91	14,833	60	14.7
Peas (Fresh)	367	53	19,451	46	6.5
Peppers	122	136	16,592	53	19.7
Potatoes	349	200	69,800	13	6.9
Pumpkins	118	96	11,328	78	20.3
Quinoa	1,600	13	20,800	43	1.5
Radish	91	200	18,200	49	26.3
Rhubarb	95	140	13,300	66	25.3
Rutabaga	163	400	65,200	14	14.7
Rye, Cereal	1,520	10	15,200	58	1.6
Salsify	372	200	74,400	12	6.5
Spinach	100	100	10,000	88	24.0
Squash (Zucchini)	64	319	20,416	43	37.5
Squash (Winter)	171	100	17,100	52	14.0
Strawberries	161	80	12,880	69	14.9
Sunflowers	2,585	5	12,925	68	0.9
Tomatoes	95	194	18,430	48	25.3
Triticale	1,538	10	15,380	57	1.6
Turnip	249	200	49,800	18	9.6
Wheat	1,551	10	15,410	57	1.6

¹An *Intermediate Level Yield* is can be achieved after a few years of growing experience and with a good level of soil fertility.

²Average caloric intake is 2,400 per person per day, equaling 876,000 calories per year. This number show us the *area efficiency* of calorie production for various crops.

³It is not recommended that someone eat only one crop variety to achieve total calories. This number is for comparison purpose of showing how efficient various crops are in terms of their *weight efficiency* for calorie production.

¹ Food Security. (2020). *International Food Policy Research Institute*. <https://www.ifpri.org/topic/food-security>

¹ Hunger and Food Insecurity. (2019). *Food and Agriculture Organization of the United Nations*. <http://www.fao.org/hunger/en/>

¹ Institute of Medicine. *Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids*. Washington (DC): The National Academies Press; 2002.

¹ Pottinger, L. (2020). *How the Pandemic Has Disrupted Food Chains*. *Public Policy Institute of California*.

¹ Jeavons, J. (2017). *How to grow more vegetables: (and fruits, nuts, berries, grains, and other crops) than you ever thought possible on less with less water than you can imagine*. California: Ten Speed Press.