



<http://www.intrans.iastate.edu/marketplanner/>

## Iowa Fruit and Vegetable Market Planner

The Iowa Fruit and Vegetable Market Planner is an entirely new and improved version of the Leopold Center’s popular Iowa Produce Market Potential Calculator. The original tool, developed in 2005, provided a quick comparison of county-by-county and state production and consumption of 37 fruit and vegetable crops that can be grown in Iowa.

This new market planner is much more than a simple update – it is a powerful tool that allows users to explore all types of local and regional fruit and vegetable markets. Users can target specific geographic regions, consumers by age groups, and different time frames. Users also can specify product mix, from fresh off-the-farm produce to canned or frozen products. All results are shown in retail weight, which takes into account spoilage and processing losses that occur after a crop leaves the farm.

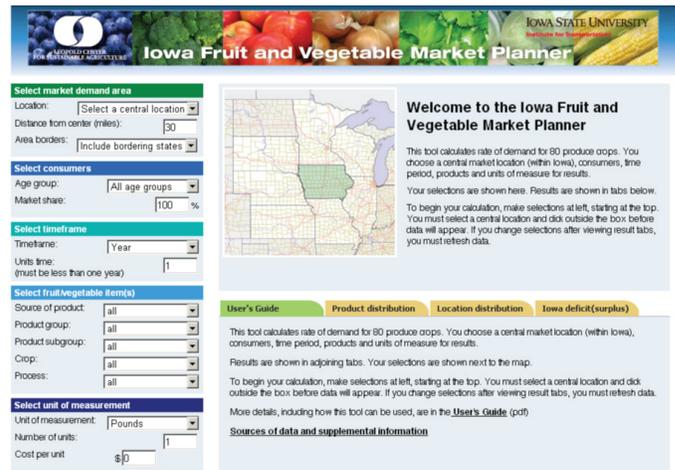
### What’s in the Iowa Fruit and Vegetable Market Planner?

The market planner identifies approximate rates of demand for 80 crops, whether they can be grown in Iowa or not. Products are identified by how the crop is processed – such as whether it is sold fresh, frozen, canned, as juice, or in a dried form – which extends the product list to 136 options.

The product list includes fruits, vegetables and tree nuts grown and reported to the U.S. Department of Agriculture in 2008. Product groups can be filtered according to individual products, or by specific crops, process, type of product group and sub-group, ability to be grown in Iowa, or any combination.

Results can be shown based on any time frame such as a 10-month school year, 20-week growing season or three-month marketing season. Users also can get results in many units of measure – from the number of acres required to grow a crop, cubic feet of storage space needed each week, or number of 20-ton truck loads per day.

Users also can more directly specify their market – to include just one Iowa community, an entire county or region within Iowa, or a region that includes neighboring communities in other states.



### How does the market planner work?

Information is generated on a database spreadsheet that has per capita rates of “food availability” reported each year in the [Food Availability Data System](#) of the U.S. Department of Agriculture’s Economic Research Service (USDA-ERS).

Food availability rates are based on the amount of domestic food production that “disappears” from U.S. markets annually after accounting for imports, exports and stock changes. The resulting values are used in economic analyses to measure trends in the types and amounts of food product demand by U.S. consumers over time. The rates also are adjusted for loss from spoilage, trimming and other processing that occurs between farm and retail markets.

The market planner multiplies the loss-adjusted per-capita rates by population estimates (from the [2008 U.S. Census](#)) of the towns and counties located in the region targeted by the user. Individual serving weights (included in the USDA-ERS spreadsheets) are used to convert the reported weight of each product to the unit of measure selected by the user. When groups of products are selected, the converted per capita rates are summed before being multiplied by population. Estimates for rural populations and cities larger than 10 square miles are pro-rated to the land area that falls within the targeted distance; estimates for towns that are smaller than this are entered into the result as a discrete total.

### Does this tool show actual consumption?

No. The USDA-ERS Food Availability Data System, on which this tool is built, is not based on direct observations of consumption. The information is calculated by adding total annual product, imports and beginning stocks of a particular commodity, and then subtracting exports, ending stocks, and non-food uses. Per capita estimates are then calculated using population estimates for a particular year.

However, this information is very useful because it can show trends in food use. Economists rely on this data to estimate effects of changes in price, income and information on food consumption. Market researchers use the data to study changes in consumption and market shares for food commodities.

### What units of measure are included?

The user selects one of the following units to measure the number of:

- Acres to produce specified product for target market
- Tons of specified product for target market
- Cubic feet of storage for product, and target market
- Gallons of specified product for target market
- Servings of specified product for target market
- Calories in specified product for target market.

The USDA-ERS Food Availability Data System spreadsheets have two values that were used to convert each product from pounds per capita per year to other measurement units in the market planner. “Calories per serving” and “serving weight” were validated against data published by the [USDA’s Nutrient Database](#), and then adapted to estimate retail weight-to-volume conversions. Expected yields for the crops that could be grown in Iowa were estimated with feedback from ISU horticultural specialists and adapted to convert from farm to retail weight using the appropriate ratios for each product.

### What market regions are included?

Users can specify market regions of any size, based on distance from any one of 947 incorporated communities in Iowa. Users select a community and the distance from that community to include in the targeted market region. Results are limited to Iowa and neighboring states. Locations in Iowa are aggregated at the community level; locations outside Iowa are aggregated at the county level.

### Who might use the Iowa Fruit and Vegetable Market Planner?

The market planner was created for producers, marketers, food buyers and others interested in the potential impacts of various changes within a specified target market or region.

**Farmers:** Farmers can use the market planner to explore and estimate the market size of a particular region of the state, and evaluate their market’s needs under various assumptions. For example, a farmer might want to know how much product would be required to capture a certain market share for a certain time frame (for example, the pounds of fresh tomatoes for 5 percent of retirees living 30 miles from his/her community during a three-month growing season). By adjusting units of measure and other variables in the tool, a farmer can estimate how many acres would be required to serve that market, how much storage space, truckloads, or total cost and revenues generated under various assumptions.

**Groups that support local foods:** These organizations can use the market planner to set goals and examine potential impact in their region. Information could be used to acquire resources for educational or research programs, to set benchmark goals of increasing local food production, or to target the installation of shared systems and infrastructure (such as warehouse services or processing facilities).

**Governmental agencies:** Officials in the transportation, municipal and regional planning and public works departments can use the market planner to estimate approximate food market size and the impact of food production/processing on roads and other infrastructure.

**Food policy councils, nonprofit organizations, researchers, economic development groups:** The Iowa Fruit and Vegetable Market Planner could be useful for assessing various impacts related to changes in food availability, diet and marketing. Research scenarios might include selection of specific targets for purchase of local foods by schools, retail, food service and other food markets at the county, state or national levels.

**Public school systems:** Officials can use the market planner to coordinate with suppliers and nearby schools for volumes of specific products needed by the school district food service. Results can be used to develop joint purchasing initiatives, coordinate food fund raisers, or for educational applications (calculating the amount of fruit and vegetable products needed in a community or region).

## How to Use the Iowa Fruit and Vegetable Market Planner

Begin your calculation by making selections on left side of webpage, starting at the top. You must select a location before data will appear, and click outside box to activate the calculation. If you change selections after viewing result tabs, you must refresh data.

This is the central location of the market, such as your farm or business. You define the distance (in miles), or driving radius where this market area will extend. Locations outside Iowa are calculated at the county level.

This shows the age group of the consumers you want to target and percentage of that market share. Options are: all age groups, preschool, elementary school, high school, adult and retired. When you select an age group, the market planner automatically calculates relative caloric demands of that group. The market share (percentage) field can be used to calculate either the entire demand for part of a certain consumer age group, or partial demand for all of the consumers residing in the targeted geographic area.

Demand can be specified by year, month, week or day. The “units time” makes further adjustments in that period (up to one year). The time frames are proportional and do not account for seasonal variations.

Select the fruit and vegetable item(s) for which you want to estimate demand. Complete in any order or combination, and each section filters items below it. Here are the options:

**Source of product:** Iowa or non-native products. Iowa products are based on whether the crop was reported anywhere in Iowa in 2007. A crop only would have “Iowa potential” if harvestable acres were reported to the USDA.

**Product group:** Fruits, vegetables or tree nuts.

**Product subgroup:** Berries, citrus fruits, green vegetables, leafy vegetables, legumes, melons, miscellaneous, non-citrus fruits, red vegetables, starchy vegetables, tree nuts and yellow vegetables.

**Crop:** Options include 80 different crops. A crop, combined with a type of processing (described as “Process”), is considered a food product.

**Process:** Fresh, frozen, canned, juice and dried. Miscellaneous is used for any product that does not conveniently fit within one of these categories. NOTE: Not all fruit and vegetables items can be found in frozen, canned or juice forms.

The screenshot shows the user interface of the Iowa Fruit and Vegetable Market Planner, divided into five main sections:

- Select market demand area:** Includes a dropdown for "Location" (set to "Select a central location"), a text input for "Distance from center (miles)" (set to 30), and a dropdown for "Area borders" (set to "Include bordering states").
- Select consumers:** Includes a dropdown for "Age group" (set to "All age groups") and a text input for "Market share" (set to 100 %).
- Select timeframe:** Includes a dropdown for "Timeframe" (set to "Year") and a text input for "Units time" (set to 1, with a note "(must be less than one year)").
- Select fruit/Vegetable item(s):** Includes five dropdown menus for "Source of product", "Product group", "Product subgroup", "Crop", and "Process", all set to "all".
- Select unit of measurement:** Includes a dropdown for "Unit of measurement" (set to "Pounds"), a text input for "Number of units" (set to 1), and a text input for "Cost per unit" (set to \$0).

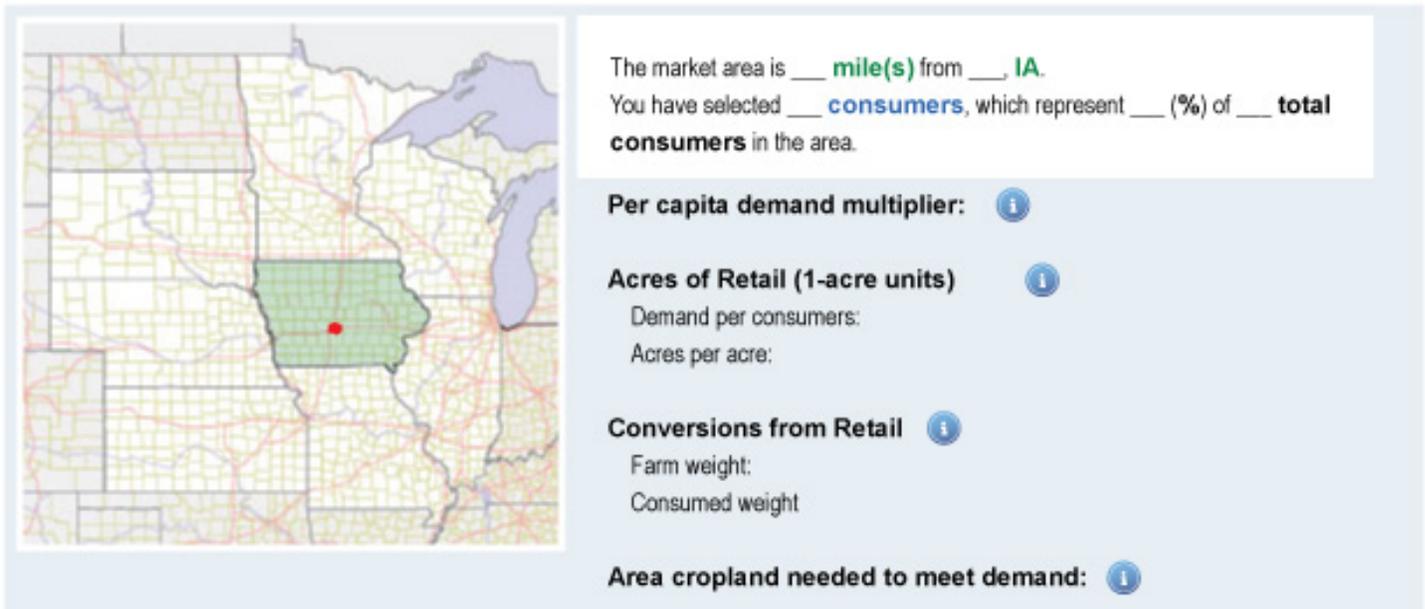
Red arrows point from the text blocks on the left to the corresponding sections in the form.

Units of measurement are acres, pounds, tons, cubic feet, gallons, servings and calories, with two options for further adjustments. This selection includes a base unit and two options that allow you to make further adjustments. “Number of units” converts unit to other measures derived from the base measure, such as 40-pound packaging cartons or 800-cubic-foot refrigerated shipping containers.

“Cost per unit” (or dollars) multiplier applies a cost rate to the selected units of measure (e.g., adding a \$2 service charge per hundredweight that a broker or distributor might apply). Multiplier can be costs or revenues, and is applied equally to each product.

## Seeing the results

As soon as selections are made, results will show in the center window of the tool. The region covered by red dots is market demand area chosen by the user. The white box shows the selections that define target market, number of consumers and total population in the target area. Other calculations are shown under tabs in the center window pane.



ⓘ **Per capita demand multiplier:** This is the percentage of the “Market share” after it has been adjusted for age groups and time frame selected by the user.

ⓘ **[Unit of Measurement] of Retail:** This is the estimated demand for the specified products for each consumer in the target market area. Demand is shown in the unit of measurement selected by the user (acres, pounds, tons, cubic feet, gallons, servings or calories).

ⓘ **Conversions from Retail:** These are the shrinkage factors for Farm weight and Consumed weight of the products selected.

ⓘ **Area cropland needed to meet demand:** This is the number of acres needed to meet estimated demand in the target market based on production data for Iowa. This measurement is calculated in increments of 0.1 percent, so acreage less than 0.1 percent will show up as 0.

Product distribution

Location distribution

Iowa deficit(surplus)

**Product distribution tab:** Shows how many units are required to cover market demand in the selected region, shown by product.

**Location distribution tab:** Shows how many units are required to cover market demand in each location, shown for all cities in Iowa and (if selected) counties in adjoining states.

**Iowa deficit (or surplus) tab:** Describes how much of the target demand can be met with established supply potential. Statewide demand is based on total state populations for the group and time frame selected. Statewide supply is based on total annual production, estimated from 2007 acreages in Iowa. If supply exceeds demand and a surplus exists, the results are shown in parentheses.

## An Example

Here is one scenario of how the Iowa Fruit and Vegetable Market Planner could be used by a farmer who wants to know:

**What is the demand, in pounds, for fresh Iowa vegetables within 100 miles of Des Moines during peak growing season?**

**Select market demand area:** Select “Des Moines” from menu; type “100” in distance from center.

**Select consumers:** Select “All age groups” and leave “100” in market share field.

**Select timeframe:** Select “Month” for Timeframe; type “3” in Units time field. (The farmer only wants to know demand during a three-month growing season, while vegetables typically are fresh from the field.)

**Select fruit/vegetable item(s):**

- Source of product: Select “Iowa Crops” from menu
- Product group: Select “Vegetables” from menu
- Product subgroup: Select “all” from menu
- Crop: Select “all” from menu
- Process: Select “Fresh” from menu

**Select unit of measurement:** Select “Pounds” from menu. The secondary adjustments (“Number of units” and “Cost per unit”) are not needed for this example.

**Select market demand area**

Location:

Distance from center (miles):

Area borders:

**Select consumers**

Age group:

Market share:  %

**Select timeframe**

Timeframe:

Units time:   
(must be less than one year)

**Select fruit/vegetable item(s)**

Source of product:

Product group:

Product subgroup:

Crop:

Process:

**Select unit of measurement**

Unit of measurement:

Number of units:

Cost per unit:

Area in center shows the region selected (map) and other information.

New results are shown here every time a selection is made.

The colored tabs show more results (more details on next page). If selections are changed after you view results under a colored tab, you will need to click on the refresh data link.

## Example (continued)

### What is the demand, in pounds, for fresh Iowa vegetables within 100 miles of Des Moines during peak growing season?

**“Product distribution” tab:** 44,277,460 lbs. of vegetables are needed to fill demand for the designated area.

User Guide Product distribution Location distribution Iowa deficit(surplus)

If you change the inputs after the tab has been opened, you may need to **refresh the data**.

**Total demand for all products: 44,277,460**

- Units: Pounds, in 1-pound units
- Timeframe: 3 months
- Target group: 100 % of all consumers
- Products listed: 26

Product distribution describes how many units are required to cover market demand in the selected region.

**“Location distribution” tab:** The city of Des Moines is responsible for 18% of that demand.

User Guide Product distribution Location distribution Iowa deficit(surplus)

If you change the inputs after the tab has been opened, you may need to **refresh the data**.

**Total demand for all locations: 44,277,460**

- Units: Pounds, in 1-pound units
- Timeframe: 3 months
- Target group: 100 % of all consumers
- Locations shown: 382

Location distribution describes how many units are required to cover market demand in each location.

Location	Demand per Location	Percentage of Total
Des Moines, IA	7,827,618	18%
Ames, IA	2,175,265	5%

**“Iowa deficit (surplus)” tab:** Scroll down list of products selected. Demand exceeds supply for all products at the state level – with the exception of “fresh pumpkin” and “sweet corn” in parentheses, indicating a surplus – so this target market offers numerous opportunities for the farmer. (Be sure to scroll down on right to see all results)

User's Guide Product distribution Location distribution Iowa deficit(surplus)

If you change your inputs after this tab has been opened, you may need to **refresh the data**.

**Total deficit (surplus) for all products: 77,581,772**

- Units: Pounds, in 1-pound units
- Timeframe: 3 months
- Target group: 100 % of all consumers
- Products listed : 26

Iowa deficit (surplus) describes how much of the target demand can be met with established supply potential. Statewide demand is based on total state populations for the group and timeframe selected. Statewide supply is based on total annual production, estimated from 2007 acreages in Iowa.

Product	Statewide Demand	Statewide Supply	Statewide Cap. Potential	Statewide Deficit (Surplus)
All products	119,305,035	41,723,263	35%	77,581,772
Mustard Greens, Fresh	106,496	2,240	2%	104,256
Lima Beans, Fresh	16,971	4,048	24%	12,923
Pumpkin, Fresh	3,087,296	7,999,325	256%	(4,812,029)
Sweet Corn, Fresh	6,275,950	19,531,024	311%	(13,255,074)

#### Who developed the Iowa Fruit and Vegetable Market Planner?

The market planner was funded, reviewed and published by the Leopold Center for Sustainable Agriculture at Iowa State University and developed and hosted by the Institute for Transportation at ISU. This tool is copyrighted and intended for educational purposes; its use and application is not intended for sale.

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#### Where can I get more information?

For additional questions, or how to use the Iowa Fruit and Vegetable Market Planner, contact Craig Chase (515) 294-3711 or [cchase@iastate.edu](mailto:cchase@iastate.edu).



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