



The Future of Food

- The world population is expanding faster than our capacity to create enough food for everybody
- As a pioneer in the pursuit of the infinite potential of amino acids, one way Ajinomoto Co., Inc. (Ajinomoto Co.) is addressing this food crisis is by investigating new sources of amino acids
- Following the protocol of the Natural Capital Coalition, we have quantified the impact of using traditional, edible sources to manufacture amino acid products versus that of using alternative organic sources
- This is just one example of Ajinomoto Co.'s dedication to helping everyone on Earth eat well and live well, far into the future

Food Evolves Too!

The way that humans eat has changed a lot over the course of history. Some of these changes are obvious—for example, woolly mammoth just isn't a dinner option any more—but some of these changes are pretty surprising. For example, consider oats. Today oats are considered a completely standard food, eaten as oatmeal or in breakfast cereal, or in snacks such as cookies.

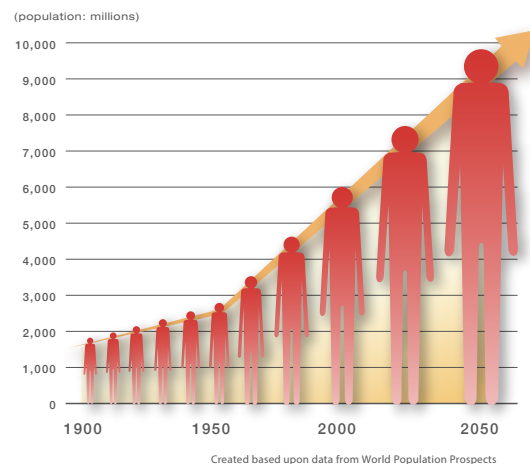
But in fact, for centuries oats were considered weeds. As recently as 1755, the dictionary defined oats as “eaten by people in Scotland, but fit only for horses in England.” (To this, a witty Scotsman replied, “That’s why England has such good horses, and Scotland such fine men!”)

Even today, some plants and animals are considered food in some parts of the world, but not in others. And even for common foods, like grapes, there are parts of the plant that are eaten and enjoyed only regionally—like grape leaves, which are traditional fare in Greece and Turkey, but thrown away in most other countries.

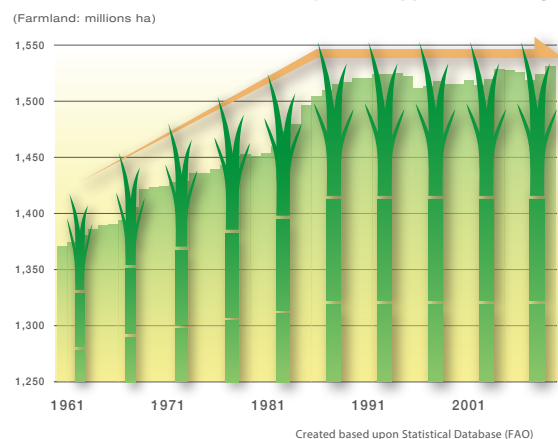
Today's Food Crisis

As discussed in the first newsletter in this series, the world population is quickly expanding beyond the availability of food. According to the latest figures, published by the United Nations in 2017, the world population currently stands at about 7.6 billion, and it's expected to reach 9.8 billion by the year 2050.

■ The World's Population is Expanding



■ The Amount of Farmland Globally Has Stopped Increasing



Eat Well, Live Well.



To feed this number of people, food production needs to increase by 60% over 2005-2007 figures. But the unfortunate truth is that the amount of arable farmland available around the world has plateaued, and is actually expected to decrease in the future.

The main reasons for this are decreasing soil quality, abandonment of farmland, and climate change.

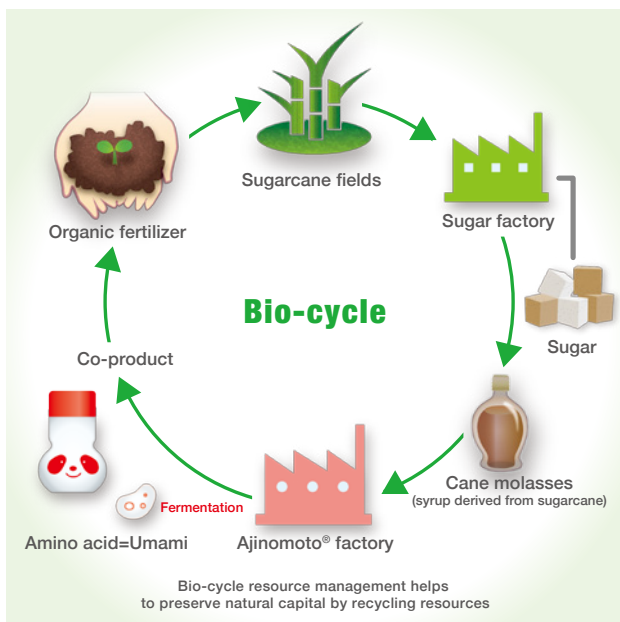
As a result, various international organizations such as the United Nations have turned their attention to the food crisis as a critical issue facing our planet.

We Can Evolve Food Further!

As a food and AminoScience company with a global footprint, Ajinomoto Co. feels a strong sense of responsibility to be part of the solution to the food crisis problem. As described in Newsletter 1, one way to do this is through the conscientious use and reuse of natural resources.

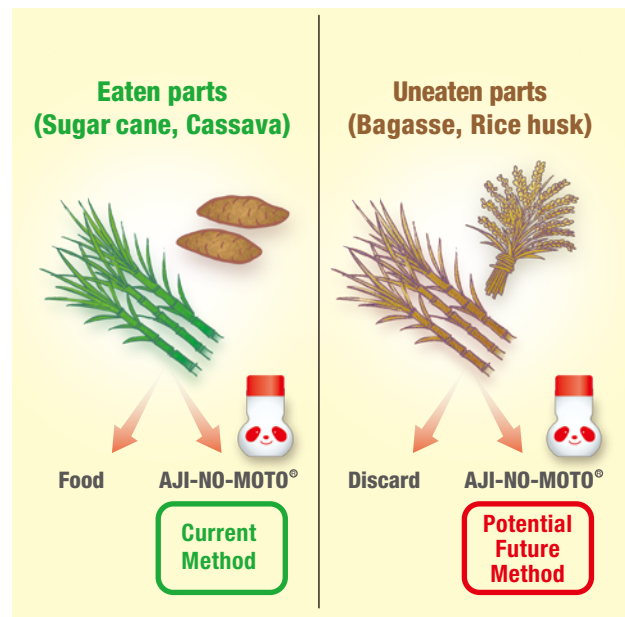
We strive to waste as little as possible by considering every co-product created in our factories as a potential source material for other products. For example, our leading product, umami seasoning, is made using amino acids fermented from molasses of sugar cane, corn and cassava starch, and the co-product of this process is returned directly to the crop fields as fertilizer, maintaining a healthy bio-cycle and eliminating waste.

■ The Bio-cycle Resource Management



In addition, we are rigorously investigating the potential to derive amino acids from alternative organic sources. In a way, the logic for this is quite clear. If, for example, amino acids are derived from a cassava (as it is in Thailand), the cassava is gone. But if we can derive amino acids from an organic source that isn't typically eaten, we can save the cassava too!

■ Positive Impact on Food Availability



Alternative organic sources for amino acids are easy to find. Predominantly, they are the parts of plants that are thrown away, such as rice straw, and sugarcane bagasse. From a scientific point of view, through the processes of biomass-to-sugar conversion technology and fermentation, it's not particularly difficult to derive amino acids from these alternative organic source materials. But of course, doing this on a large scale requires further research, analysis, and investment valuation.

How Can We Measure the Impact of our Efforts?

At the World Forum on Natural Capital, which took place in London on November 27, 2017, Ajinomoto Co. became the first Japanese company to publically align with the concept of the "Natural Capital Coalition Protocol," and announced natural capital assessment based on it. This rigorous methodology helps organizations to quantify their impact and dependence on local resources, which helps with budget allocation and R&D decision-making.



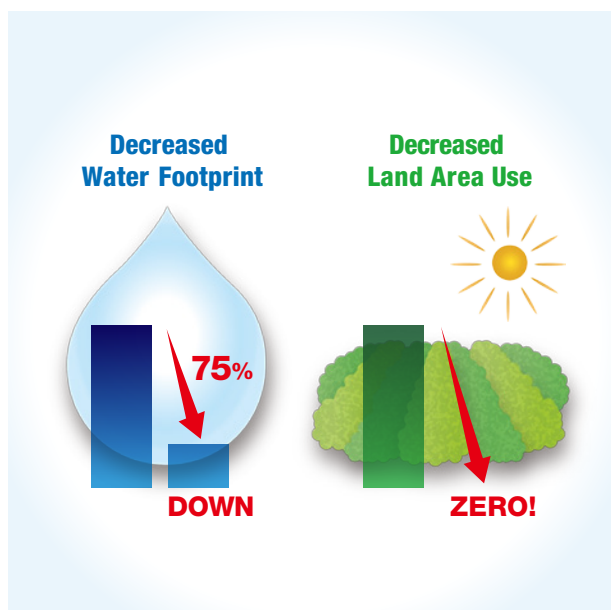
What If...? Assessing the Impact of Using Alternative Organic Sources

Measuring the impact of a major change in a manufacturing process, both environmentally and economically, is very challenging. It goes way beyond the costs of machinery and the use of natural resources, and leads to some very profound questions. For example, what is the value of a liter of fresh water? Well, the answer is quite different in a rainforest or in the desert.

Each local area where manufacturing takes place must be considered independently. And the factors that must be considered range from local weather to local government policies.

Ajinomoto Co. ran a comprehensive analysis of the hypothetical impact of converting our manufacturing operations in Thailand from using cassava to using rice straw as the source for amino acid production. The results showed that from almost every point of view, using rice straw had a substantially positive impact. In particular, the “water footprint” of manufacturing would decrease by almost 75%, and the land area required for the raw materials would decrease from more than 30,000 hectares to zero! Even in financial terms, the cost for both the business and the local community was found to be substantially lower.

■ Positive Impact of Rice Straw Utilization on the Environment



What Does the Future Hold?

Needless to say, making a change of this magnitude is not something that should be done casually. It is likely that much additional research will be done in this area, by Ajinomoto Co. and by other organizations, to determine if and when the source materials for food products should be changed. But the trend is clear, and the benefits of making such a change are becoming clear as well.

Our commitment to the planet and its inhabitants goes beyond this month or this year. To fulfill our mission as a company, we must look decades into the future, so we can make the smartest decisions we possibly can today. Our ambition is to be fully prepared to take the important steps necessary for the sake of the planet, when the time is right. And we will always continue to conscientiously search for new approaches to preserve and protect our planet’s precious resources for all future generations.

About Ajinomoto Co., Inc

The Ajinomoto Group is a global leader in amino acids thanks to its advanced bioscience and fine chemical technologies. Its products cover a range of fields such as seasonings, processed foods, beverages, amino acids, pharmaceuticals, and chemicals.

Since discovering “umami” (the fifth basic taste, created by glutamic acid, a type of amino acid) in 1908, we have been scientifically pursuing the possibilities of amino acids, and supporting the healthy lives of people all around the world. Based on our corporate message “Eat Well, Live Well.” we aim for further growth and continuous contribution to greater wellness for people by creating value with communities and society.

The Ajinomoto Group has offices in 35 countries and regions, and sells products in more than 130 countries and regions. Its sales were 1.1502 trillion yen (10.3 billion U.S. dollars) in fiscal year 2017. To learn more, visit <https://www.ajinomoto.com/>.