



Eat Well, Live Well.
AJINOMOTO® NEWSLETTER

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Who Will Feed the World?

Ajinomoto Co., Inc.'s Challenge

[Ajinomoto Co., Inc.](#) ("Ajinomoto Co.") was born from the research of a single scientist more than 100 years ago. At the time, nobody could have imagined how the company—and our entire world—would change and grow.

Today, Ajinomoto Co. operates in 30 countries around the world. And we strongly believe that this large global footprint gives us a large responsibility for the wellbeing of our planet.

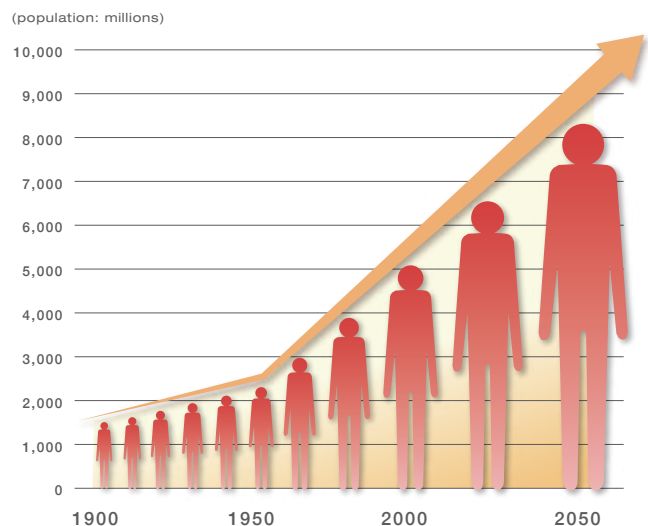
For this reason, Ajinomoto Co. strongly supports the United Nations' Sustainable Development Goals (SDGs)—especially "Healthy Living," "Food Resources," and "Global Sustainability"—through the active use of "co-products" and amino acids to improve the world for plants, animals, and people.

Can We Help to Avoid a Global Food Crisis?

For years, scientists and researchers have been warning of a potential food crisis across the planet. And unfortunately, the data suggest that the threat is real.

According to a 2017 FAO report, the world population has already reached 70 billion, and is expected to reach 97 billion by 2050, suggesting an increasing threat of a large-scale food shortage.

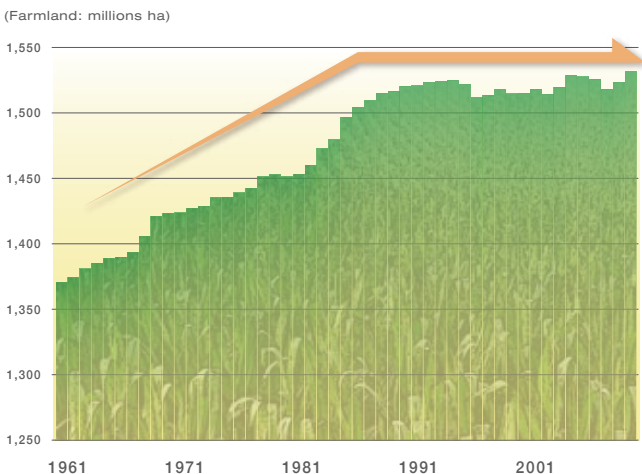
■ The World's Population is Expanding



Unfortunately, agricultural production is not keeping up with the increasing demand. To feed the world, we will need to increase food production by 50% from 2012 figures. And if we do nothing, an estimated 600 million people—almost double the entire population of the United States—will suffer from malnutrition by the year 2030. Exacerbating this problem, agricultural output is actually expected to *decrease*. Causes of this include:

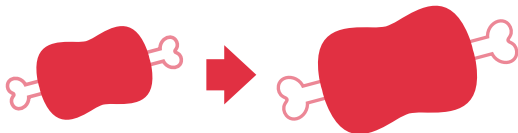
- Deterioration of soil quality due to lack of crop rotation, especially in developing countries
- Continued migration of people from rural to urban areas, which leads to farmlands being abandoned
- The slow transformation of fertile lands into desert, due to deforestation, climate change, and unsustainable farming techniques

■ **The Amount of Farmland Globally Has Stopped Increasing**



In addition, meat consumption in developing countries is expected to increase by 50% by the year 2050. And of course, livestock and agriculture are linked together in a single system—the more animals we require, the more agriculture we require to feed them.

■ **The Demand for Meat is Increasing**



Meat consumption in developing countries in 2050 compared to 2005 through 2007

+50%

Being Part of the Answer

In this context, what the world needs may be challenging to achieve, but at least it is clear:

- Protection of farmlands
- Increased agricultural yields
- Sustainably increased livestock production

And at Ajinomoto Co., we believe that it's up to global food companies like ours to actively contribute to these activities.

Ajinomoto Co. has discarded the idea of “discarding”

The English-language word “waste” means “anything that is thrown away.” But it also means, “to lose an opportunity.” And that’s why Ajinomoto Co. thinks that the entire idea of waste is, well, just plain garbage. Any time that anything is manufactured, byproducts are created. At Ajinomoto Co., we call these “co-products,” and we actively figure out the ways that they can be put to good use for the benefit of our planet.

A few examples from around the world can make this point clear.

Kyushu Case Study: Waste stinks!

Composting is one of the most famous—and oldest—ways of promoting sustainable agriculture. The process is actually very easy—just put vegetation like mown grass or dead leaves together with uneaten food and manure, let the mixture decompose, and you’ve got a fantastic fertilizer. The only problem is the smell. Unless you’re a fly, decomposition is not an agreeable odor.

■ **Local Famers in Kyushu, Japan**

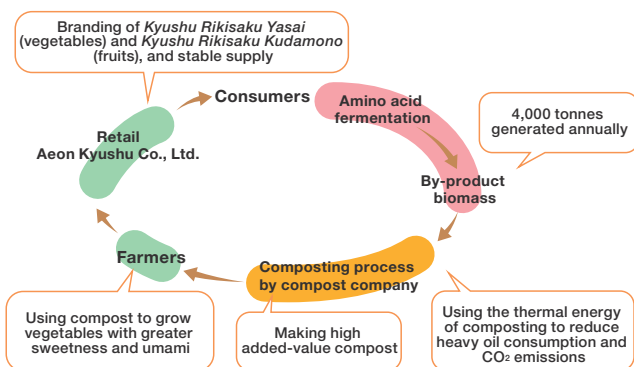


But this is a barrier that Ajinomoto Co. can help to overcome. For years, our factory in Kyushu has been creating solid fertilizers using co-products from the fermentation process of amino acids. Although this cuts down on waste, the solid fertilizer required heavy oil for its preparation—another potential waste product.

But we found another way. By mixing the solid fertilizer with compost generated on local farms, the use of heavy oil wasn't necessary. We were able to save 600 kiloliters of oil per year, and reduced CO₂ emissions by 2,000 tonnes.

And even better—at least from the point of view of local farmers—was that this reduced the disagreeable smell of ammonia from the compost.

■ Value Chain Promoting Local Agriculture in Kyushu



This program represented a win for everybody involved. The resulting compost not only smelled better—it worked better, increasing the crop yield and quality for local farmers. This helps to ensure a steady supply of high-quality produce for local distributors to sell, which is good for the local economy. And of course, even consumers got a benefit—delicious fruits and vegetables.

You could even say this was a “win” for the planet, because the use of heavy oils and CO₂ emissions were both substantially reduced.

■ A Win-Win-Win Situation



Thailand Case Study:
 Tying Up with Local Interests

For more than 40 years, AJINOMOTO CO., (THAILAND) LTD. has been providing co-products as organic fertilizers to farmers working near the factory in Thailand. Their local subsidiary, FD Green (Thailand) Co., Ltd. (“FDG”), has also been guiding farmers to raise high-quality, value-added crops. FDG then buys these crops from the local farmers as raw materials for use in our products. It’s another win-win situation.

■ Local Farmers in Thailand



This symbiotic relationship between FDG and local Thai farmers has produced:

- 30% of the coffee beans used in *Birdy®* canned coffee
- Cabbage for gyoza produced by Ajinomoto Frozen Foods (Thailand) Co., Ltd.
- High-oleic sunflower oil used in Japanese sweets

Using Our Products to Improve our Co-products

Our co-products make great fertilizer because they're full of amino acids, minerals, and other natural nutrients. So doesn't it make sense that adding *more* amino acids and minerals to our co-products would make even *better* fertilizer?

It does. Adding our amino acids to our co-products promotes plant rooting, plant growth, and crop yields. It even gives plants stronger resistance to disease, and sweeter fruits.

And of course, we've developed a number of other uses for our amino acid products that promote agriculture and the farmers who depend on it.

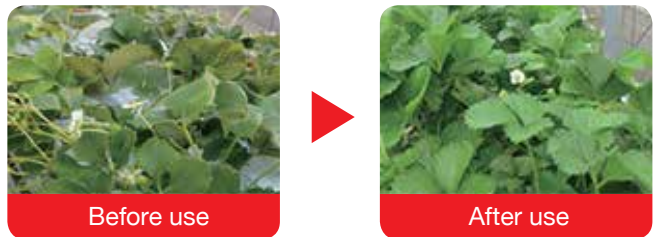
Brazil Case Study: Getting to the Root of the Problem

Everybody knows how plants work. The roots of the plant pull moisture and nutrition from the soil, which is then transported up the stalk of the plant to the leaves, finally reaching the fruit.

The only problem is that the roots and stalk take some of the nutrition for themselves. It's almost like a transportation tax. From the farmer's point of view, as long as the plants are healthy, the important part is the fruit. The more nutrition that reaches the fruit, the higher the quality.

To this end, in Brazil, we may have improved on nature itself by developing a fertilizer that avoids the plant's root system entirely. *AJIFOL® AminoGuard®* is a "foliar fertilizer" that is sprayed directly onto the leaves of fruit-bearing plants like strawberries and tomatoes, supply amino acids directly where farmers want it the most. This increases plant health and crop yield.

■ Effect of Foliar Fertilizer on Strawberries



Spraying *AJIFOL® AminoGuard®* on the leaves of strawberries with developmental impairment thought to be caused by root damage resulted in restored vigor and improved leaf color

■ Local Farmer in Brazil



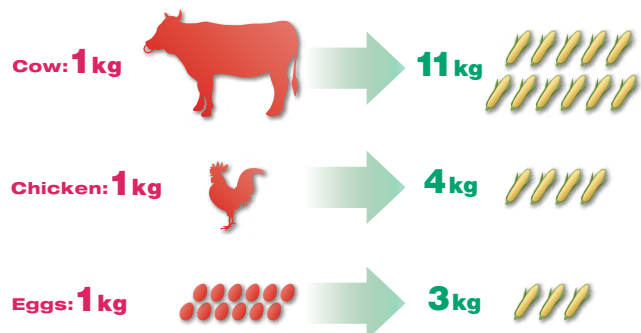
Edison Cosmo, a Local Brazilian farmer:

"We've been using the Ajinomoto Group fertilizer for ten years, gradually increasing the amount because of the amazing results we've seen. Now we use it on all our crops. We are impressed with how this fertilizer has improved plant growth and returns."

Beefing Up Livestock Production

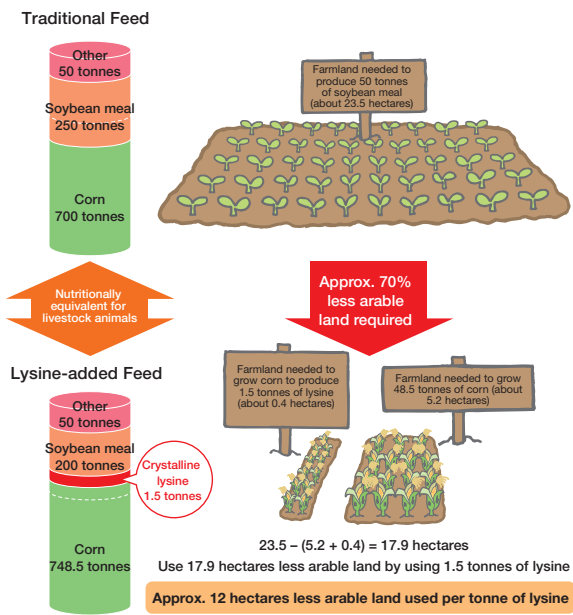
Protein is indispensable for human life, and by far, the richest source of protein in our diet is meat. As the world's population continues to expand, so does our need for a sustainable supply of livestock. And as the amount of livestock increases, so does the amount of feed required by the animals.

■ Livestock Production Consumes Agriculture



Our biggest contribution to sustainable livestock production is in more nutritious feed. Animals that consume more nutritious feed require less of it, and that has a positive impact on agriculture. It is estimated that adding lysine to livestock feed conserves 23 million hectares of fertile land—five times the total area of fertile land in all of Japan!

■ Adding Amino Acids to Livestock Feed Saves Farmland



We're Just Getting Started

These case studies show just a few examples of how Ajinomoto Co. is supporting a sustainable future for our planet. And we're constantly looking for more opportunities to serve the world, starting in the communities where we work.

About Ajinomoto Co.

Ajinomoto Co. is a global manufacturer of high-quality seasonings, processed foods, beverages, amino acids, pharmaceuticals and specialty chemicals. For many decades Ajinomoto Co. has contributed to food culture and human health through wide-ranging application of amino acid technologies. Today, the company is becoming increasingly involved with solutions for improved food resources, human health and global sustainability. Founded in 1909 and now operating in 30 countries and regions, Ajinomoto Co. had net sales of JPY 1,091.4 billion (USD 10.07 billion) in fiscal 2016. For more about Ajinomoto Co. (TYO :2802), visit www.ajinomoto.com.

For further information or references and literature support of any information contained in this newsletter, please contact Ajinomoto Co., Inc. Global Communications Department: ajjgcd_newsletter@ajinomoto.com

The Barrel Theory

Animals need a variety of amino acids to survive. According to “The Barrel Theory,” when an animal’s diet is lacking one or more essential amino acids, protein cannot be processed effectively, and the surplus amino acids are excreted. And this is why adding lysine to livestock feed has such a dramatic impact on productivity—leading to an increased supply of meat, and more efficient use of farmlands.

■ The “Barrel Theory” of Amino Acids

