Feature 3

Products and Services

Contributing to the Environment through Product Features

Environmentally friendly from start to finish

The Ajinomoto Group values the bounty of nature: it continually strives to make its products and services more environmentally friendly, and to minimize environmental impact at all stages of production. At the same time, the Group knows that it is important to work more aggressively on enabling its products and services to contribute to environmental conservation through product features after delivery to customers. Accordingly, the Group is committed to innovating—products, technologies, and business model—with a view toward creating new environmental value in both products and services.

Identifying and Increasing Environmental Value in Products

Amino acids

● Environmental contributions in agriculture and the livestock industry

Amino acids are vital to all life. They also have the potential to make a range of environmental contributions. For example, feed-use amino acids can reduce the nitrogen load on soil and water from livestock farming. Recently, expectations have risen that these products can contribute to combating global warming by suppressing the generation of greenhouse gases. As a non-animal derived substance, the Group's amino acids also have potential as a raw material for eco-friendly products. Moreover, the by-products generated during the production of amino acids have diverse value as resources: they can be utilized as feed and fertilizer in the agriculture, fisheries, and livestock farming, for example. Ajinomoto Co., Inc. is determined to identify environmental value in the amino acid business and in the technologies it has cultivated over the past 100 years, and to work to enhance this value.

➡See pages 30-31 for developing environmental uses for amino acids.

Food products

● Contributing to eco-living at the dining table

Although there are some low levels of residue, nearly all materials are converted into products during the Group's food manufacturing. The manufacturing approach values the bounty of nature, while ensuring safety and reliable quality. At the same time, the Group takes the reuse, reduction, and recycling of the containers and packaging that remain after the consumption of products by customers as a particularly important issue. Moreover, it is making efforts to help people embrace eco-living at the dining table with recipes and ideas that place importance on ecological concerns. For instance, the Group suggests good ways to use Ajinomoto-brand seasonings to prepare delicious foods using in-season ingredients, and that can be enjoyed without leaving leftovers.

➡See pages 33-36 for containers and packaging.
➡See pages 23-25 for suggestions for eco-living.

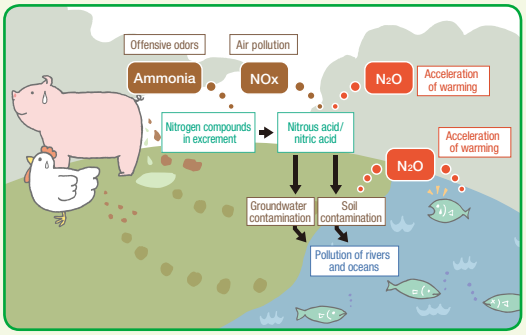
Environmental Contributions of Feed-use Amino Acids

—Reducing environmental load and combating global warming by eco-friendly livestock farming

Feed-use amino acids can be used to economically supplement amino acids that tend to be deficient in conventional feeds given to livestock. They can also contribute in a variety of ways to food and environmental problems.

Less environmental load on soil and water —Reducing nitrogen in the effluent from livestock

When animals are given feeds that are deficient in even one of the amino acids needed, the body cannot effectively use the other amino acids. These end up being wasted and excreted as nitrogen compounds. Excessive excretion of these compounds can cause soil and water pollution. Supplementing the deficient amino acids with feed-use amino acids improves the efficiency with which the animals' bodies utilize amino acids. This leads to lower amounts of excreted nitrogen and helps reduce environmental load.



Combating global warming —Suppressing the generation of N_2O

Nitrogen compounds from manure and urine are oxidized/reduced by soil and air, with some nitrogen being released into the atmosphere as nitrous oxide (N_2O). The greenhouse effect of N_2O is about 300 times that of CO_2. N_2O has the next largest impact on total global warming after CO_2 and methane. The use of feed-use amino acids can contribute to combating the generation of the greenhouse gas N_2O by suppressing the generation of nitrogen compounds themselves.

Helping solve food problems —Effective utilization of farmland

The use of feed-use amino acids also enables the simultaneous achievement of increased food production and environmental conservation. Common compound feeds for livestock are composed of ingredients such as corn and soybean meal. Nutritionally, 50 tons of soybean meal in 1,000 tons of compound feed can be replaced with 48.5 tons of corn and 1.5 tons of crystalline lysine. Since the yield per unit of land for corn, which is also the raw material for lysine, is about three times higher than that of soybeans, about 18 hectares of farmland can be saved by making the switch from soy bean to corn production. Using feed-use amino acids means the area of farmland needed for feed-use crops can be reduced, contributing to environmental conservation by combating deforestation due to the expansion of farmland, and by helping avoid competition between livestock and humans for food supplies.

Amino acids are an essential nutrients for all animals. In particular, amino acids that cannot be synthesized within the body—known as essential amino acids—must be obtained through the diet. However, there are amino acids that tend to be deficient in conventional compound feeds such as corn, wheat, and soybean meal given to livestock. Feed-use amino acids—represented by lysine, threonine, and tryptophan—are used to compensate these deficiencies.

Izuru Shinzato
Manager, Research & Development Group,
Animal Nutrition Department, Ajinomoto Co., Inc.

Three kinds of feed-use amino acids products

Lysine
The essential amino acid most likely to be deficient in livestock feeds

Threonine
The essential amino acid most likely to be deficient after lysine in commonly used livestock feeds

Tryptophan
An essential amino acid that tends to be deficient in piglet feeds, especially when primarily composed of corn

In fiscal 2008, Ajinomoto Co., Inc. started joint experiments with an outside research institution to ascertain the lifecycle CO_2 emissions (LC-CO_2) from livestock farming when using and not using feed-use amino acids.

Ecological Seasonings
HON-DASHI® —Valuing the bounty of nature

Since its market launch in 1970, *HON-DASHI*® has continued to underpin the delicious flavor of Japanese home cooking. In fall 2007, Ajinomoto Co., Inc. released a new *HON-DASHI*® with an even better taste and improved user- and environmental-friendliness based on thorough packaging redesign, and a reconsideration of raw materials and production processes.

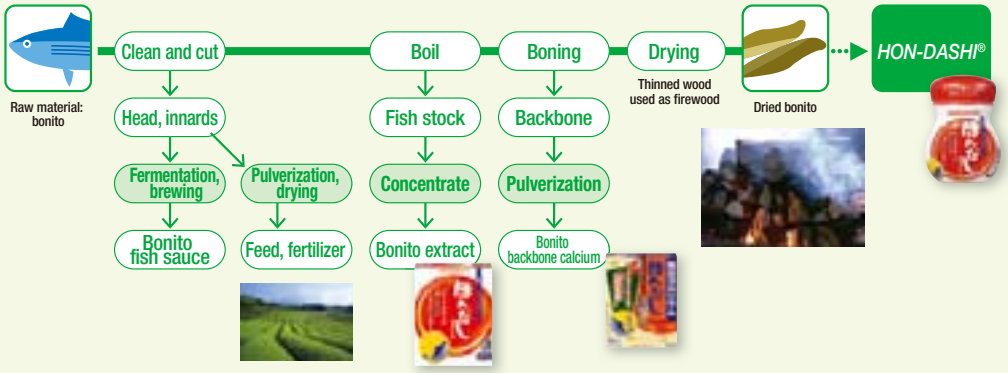
The Ajinomoto Group uses the bonito fish (skipjack tuna)—one of the bounties of the oceans—with great care. It strives to reduce the amount of packaging and containers—that are unnecessary after the content has been used up. Further, the Group encourages people to skillfully use seasonings so that in-season ingredients are enjoyed and eaten without leaving leftovers. The Group is committed to delivering environmental-friendliness to dining tables, along with the delicious flavor of Japan's most popular stock base.

Ecological production

Using the whole fish

The main ingredient in *HON-DASHI*® is dried bonito made from bonito arriving at Yaizu port in Shizuoka Prefecture and Makurazaki port in Kagoshima Prefecture. The Ajinomoto Group carefully uses the whole fish, including the backbone and innards that are removed during the process of making dried bonito, and fish stock from this process.

Moreover, Ajinomoto uses oak and sawtooth oak thinnings from Japan as firewood when smoking dried bonito.



Ecological use

Ecological containers and packaging

Containers and packaging are essential for delivering products to customers. The Ajinomoto Group is committed to advancing environmentally friendly designs that use as little packaging material as possible and that can be reused. The Group redesigned the containers and packaging of the new *HON-DASHI*® from each of the 3R perspectives:

- Used standing pouches for refilling bottles to promote reuse. This reduces CO_2 emissions by about 60% compared to the conventional paper box product (a box weighing 150 grams).
- Devised labeling that makes the fact that the product is for refills clear at a glance.
- Started selling "refillable eco-sets" of bottles and pouches in the fall of 2007.
- Made efforts to reduce the overlap width of the paper box product, which reduced paper usage by about 28.5 tons per year compared to the conventional product.

Ajinomoto offers a lineup of 160-gram refills in standing pouches and 60-gram and 170-gram refillable bottles.

Enjoying great taste without waste and leftovers

Japan is not very self-sufficient regarding food, nevertheless, it throws away the equivalent of one third the amount of food it imports. The Ajinomoto Group encourages families to skillfully use *HON-DASHI*® and other seasonings to increase their menu choices, while creating delicious dishes without wasting ingredients and enjoying them without leaving leftovers. It has also started providing eco-recipe suggestions using Japanese, Western, and Chinese stocks at exhibitions, cooking classes, and other venues.

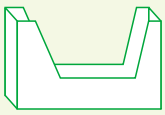
In fall 2007, the Group launched an eco-campaign, encouraging eco-living starting with the dining table, by placing "refillable eco-sets" of bottles and pouches and "eco-bag sets" in stores.

We strive to practice environmentally friendly manufacturing that makes careful use of raw materials so that we can always deliver great tasting *dashi* (a traditional Japanese stock) for miso (bean paste) soups and stews. When developing our new *HON-DASHI*®, we emphasized environmental- and user-friendliness. We are committed to delivering both great taste and an eco-living to people's dining tables by continually working to improve the environmental friendliness of our products.

Yoichiro Ito, Manager, Seasonings Department, Ajinomoto Co., Inc.

Ecological Gifts
—Gifts for an eco-living that are good for both the environment and people

Ajinomoto Co., Inc. will revive its redesigned eco-gift series launched in 1999. The new eco-gifts, *Kankyo-Ippin* (translated as Environmental Masterpiece), which were released in October 2008, are beneficial for both the environment and for people; they feature improved environmental friendliness and universal designs that make them easier to use. The company paid particular attention to reducing the quantity of containers and packaging, as these kinds of gifts originally used a lot of packaging material. Thinking sincerely about the global environment, the company determined to develop *Ajinomoto® Gift* products that enable people to give gifts for eco-living as well as for great taste and good health.



The gift box is designed to be reused as a storage box by removing the lid.

Reduces promotional material by opening the lid, stuffing it into the box and using it instead of point-of-purchase displays in stores!

Easy to hold and pour.

Kankyo-Ippin eco-pouch *Kenko Sarara* gift
(Five-pouch box: EPH-35)
(Eight-pouch box: EPH-55)

Reduced packaging weight of gift boxes!
EPH-35: Down about 15%
EPH-55: Down about 25%
EPS-55: Down about 25%

Compacts to 1/10 the size if rolled up and thrown away after use. Packaging weight reduced by about 60%.*1

Amount of plastic resin reduced by about 2/3. *2

New eco-packs variety oils gift (EPS-55)

The *Kankyo-Ippin* eco-gift series that we launched in 1999—ahead of other companies—was unfortunately discontinued since consumers' environmental awareness at that time was not what it is today. Now, we are bringing the series back, and with even greater environmental friendliness. We are also paying close attention to design, to give the products a feeling of high quality gifts. I hope that people will now start exchanging gifts that are good for both the environment and for people.

Kensuke Sakakibara, Gift Pack Department, Ajinomoto Co., Inc.

*1 Compared to the amount of plastic resin in a PET bottle of the same weight.
*2 Compared to the amount of plastic resin in a normal plastic bottle.

T O P I C S

Increasing products' environmental friendliness
—Eco-study sessions for product developers

Ajinomoto Co., Inc., recognizes the importance of the environmental friendliness of products. Accordingly, in July 2007 it started holding eco-study sessions for product developers. These sessions are led by the Advertising Department, which is broadly involved in creating product design concepts. So far, study sessions have been held 15 times in ways that involve a diverse group of relevant persons from within the company, including staff from the R&D and public communications departments. During a mini-workshop following a lecture, the participants voiced varied opinions ranging from ideas about down-to-earth eco-activities to future environmental business models. These ideas will be used in developing future products.

Lectures were given by experts in different fields. Some of the topics were:

- Environmental Issues and Design: Ryoichi Yamamoto, Professor, the University of Tokyo
- Eco-Design and the Media: Kazumi Oguro, Editor in Chief, Sotokoto magazine
- Eco-Management in Companies: Kimitaka Kato, President, Fujitsu Design Ltd.
- Eco-Design and Marketing: Shinya Nagasawa, Professor, Waseda University
- Ecology and Food: Manabu Akaike, President, Universal Design Intelligence., Inc.
- CSR, Money, and the Perspective of Housewives: Mariko Kawaguchi, Researcher, Daiwa Institute of Research Ltd.
- Ecology, Food, and Energy: Toshinobu Kanaya, Professor, Keio University
- The Practice of Eco-Designs: Haruhiko Asai, product designer