

A close-up photograph of a green wheat stalk, showing the individual grains and the surrounding awns. The image is the background for the entire slide.

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Mongolian Natural Product Business Opportunities

BAYASGALAN.B
Director, MOPSA
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About MOPSA

- **Mongolian Organic Production Support Association (MOPSA)** is NGO which was established in 2006. MOPSA is offering a diverse range of services to various industry and Government throughout Mongolia.



Our Goals:

- Service to our clients
- Quality in our work
- Growth and development of our people
- Professionalism in everything we do
- Profit through productivity and efficiency
- Support organic product

Staff:

MOPSA has a team of full and part time members and experts with diverse expertise and skills acquired from a wide range of educational, career and life experiences.

Our cooperating network

- Many of our members and experts have career backgrounds in environmental management with Government agencies, NGOs, private sectors and research institutions :



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Our clients



Implemented Major Projects

MOPSA implemented the following projects:

2006 Community Damp Sudgii
Project, project financed by the
Global Environmental Facility/
Small Grant Programme
(GEF/SGP) implemented on
the behalf of the tree GEF
Implementing Agencies –
UNDP, UNEP and the World
Bank-and executed by
UNOPS.

2007 Tree nursery project,
SGP, UNDP

2010 The Beginning of Green
Walls of Trees in & sums

Implemented Major Projects (cont.)

MOPSA implemented the following projects:

- 2014 Improvement of farming System to Support Ecosystem Services in Satoyama Landscape.
- 2015 Introduction of cool season greenhouses in Mongolia
- 2015 Support for Initiatives to Combat Desertification in Gobi Region.
- 2016 Establish Forest Strips in Crop Fields in Four Soums of Tuv and Bulgan aimags and Bushes will be planted around the headwaters of Zuunmod's River

Mongolia Economy Data

	2011	2012	2013	2014	2015
<u>Population (million)</u>	2.8	2.8	2.9	2.9	3.0
<u>GDP per capita (USD)</u>	3,783	4,377	4,598	4,166	3,971
<u>GDP (USD bn)</u>	10.5	12.4	13.3	12.2	11.8
<u>Economic Growth (GDP, annual variation in %)</u>	17.5	12.5	11.6	8.1	2.4

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Organic Product Market Situation



Organic product market situation

The agricultural industry plays a key role in Mongolian economy. Nomadic livestock industry and crop industry account for 85% and 15% of the total agricultural output, respectively.

Brief history and current situation of Mongolian agricultural system Mongolia has broad and wide territory which covers an area of 1.5 million square kilometers and a dense population of 2.7 million people. It is situated in central Asia and shares borders with Russia and China. The climate is continental with four seasons a year.



Organic product market situation (Cont)

In discussing about Mongolian food supply, we should talk about 2 main sectors:

- Agriculture
- Animal husbandry

There are 5 strategic products of our country which come from 2 of the above sources:

- Wheat -meat
- Potato -milk
- vegetable

Agricultural sector



Wheat

- Mongolians are not the only ones who is facing a wheat supply trouble. It became a worldwide problem to solve. Wheat production plays a very big role in the Agricultural division as well as cereal grains are humankind's major food.
- Until the middle of the 1990s Mongolia was self sufficient in wheat and an occasional exporter. Wheat production has declined steady since 1994 and commercial imports, food aid of wheat have increased.



- Wheat is the main crop in the country and wheat flour is the major food staple, covering approximately 59 percent and 52 percent of the daily caloric intake in urban and rural areas respectively.
- In particular, wheat flour is essential in the diets of the extreme poor populations of the cities who could not afford to buy meat and milk products.
- Therefore, there is Government' concern about the role of domestic production in assuring food availability and in reaching higher levels of self-sufficiency.

Animal Husbandry

- We can almost say Animal husbandry is an old traditional custom of Mongolian life.
- Our main livelihood source and the wealth is livestock. The main foundation of Mongolia's economy, pasturing livestock husbandry still plays an important role in our economy, employment and export revenues.
- Today in the livestock sector the main producer is a herder household who handles livestock activities year round for the purpose of livelihood and source of income. Also Animal husbandry has a lot of benefits and two of them are meat and milk which are included in our country's strategic products. Mongolia is one of the leading countries of livestock per capita.
- By January 1st 2016 the number of livestock in Mongolia has reached 65.2 million heads. In this case we should think about Mongolian population of 3.3 million people. About 40 percent of total labor force of the country is engaged in the animal husbandry and animal originated products form around one fourth of the export income.



Meat



- The country is self-sufficient in meat and has an exportable surplus. Most of the meat consumed in the country is processed in rural households using traditional techniques.
- The formal meat industry collapsed with the privatization of in 1991 and while production of meat increased steady until 2000, exports of meat fell by one-third.
- Following the severe lost of animals in 2000-2002, meat output declined sharply from
- 2001 to 2003. Despite some recovery in the past years, production of meat has remained well below the levels of the 1990's and exports are very limited.
- As a result of the lower meat availability in recent years, production of meat in 2015 supplied about 85 percent of total consumption.

Milk



- The bulk of the milk consumed in rural areas is in the form of customary milk products. Similar to meat, only a small proportion of the total milk produced in the country is processed by the formal dairy industry. Mongolia used to be self-sufficient in milk in the socialist period and even a small exporter.



Potatoes and Vegetables

- Mongolia also produces potato and vegetables, but the planting areas are very small related to wheat crop. Similar to wheat, potato and vegetables growing is concentrated in the Central provinces. Along with the most other food industries, the sub-sector collapsed in the middle of the 1990s.



- While recovery in production has been considerable in recent years, far more impressive have been the increase in the imports of potatoes. Concern about the quality
- and safety of the imported potatoes and vegetables is widespread in the country and there is a clear market preference for locally grown products, despite their higher prices.

Agriculture & organic & natural products

- Mongolian Government implemented Seabuckthorn Program-seabuckthorn juice, oil. Some area of the country to increase bee production-honey, venom, propolis, apitherapy, Honey, Chaga mushroom,) - related research and consumer products making technologies



Honey and Bee products

- Honey and bees products follow man through history. Honey sweetened the lives of people and at the same time was a preventive against many illnesses. Since then we have gathered many information about its creation, varieties, properties and ways of use. Nevertheless, not all of its secrets have been discovered.
- Articles on honey and bee products appear occasionally in magazines, newspapers and books, and some of them can be found here, but **PAY ATTENTION** – approach the information with a reserve – not all have been scientifically confirmed.



honey



royal jelly



propolis



bee wax



bee pollen



bee venom

Honey and Bee products

All bees products can be classified into two large groups: the products of animal and plant origin.

Products of plant origin are: honey, pollen, propolis, gathered by a bee from flowers and stored in the beehive. Products of animal origin are: royal jelly, beeswax and bee venom, created by the bee in its own body. All these ingredients are essential to the bee, and without them the bee and the entire bee-hive could not survive.

Honey is a thick, sweet, syrupy substance and is the most basic of the honey-bee products. **Bees produce honey** by collecting pollen, mead, nectar and other sweet syrups from plants, which they enrich with substances from their own body and place into honeycombs, where this mass matures into honey. Honey was originally used as a sweetener and a nutritional additive, to be increasingly used later in pharmaceuticals and medicine. An important bee product is pollen, as well. Pollen is an essential ingredient to the life of every beehive. Without pollen, bees could not produce food for the embryo and the “mother”, which would lead to their extinction. While honey provides bees with fructose and glucose sugars, enzymes and mineral ingredients, pollen provides them with sufficient protein, fats, vitamins and minerals. Honey provides bees with the energy needed to collect pollen and nectar.

Propolis is a mixture of wax and glutinous substances, collected by the bees from the buds of perennial plants. Propolis is used by the bees to reinforce the honeycomb and to seal the gaps. It performs the role of disinfecting the wax cells and the entire beehive. Propolis contains easily volatile etheric oils possessing clearly marked antimicrobial effects. Beeswax is used by the bees to construct the honeycomb, where they afterwards lay their larvae and store food reserves. Since it is very dark in a beehive, bees use the honeycomb as a means of communication, utilizing its vibrations to communicate.

Bee venom is a product used by the bees as a means of defense against many aggressors desiring to take their riches. Its main field of application is in medicine.

Royal jelly, perhaps **the most important bee product** stimulates regular growth and development of an organism, adds the needed strength, activates metabolic processes in an organism, maintains a regular functioning of the endocrinal system. By using royal jelly, a normalization in the functioning of all systems and organism as a whole is achieved.

Bees Products in Nutrition

Most of honey (70%) is comprised of simple sugars (glucose and fructose), which going from the stomach and the bowel without any processing reach the surface of the mucous membrane, where they are absorbed directly into blood. Through blood they spread further into different parts of the body, muscles and liver, where glycogen is produced from their surpluses. In the case of an increased physical activity, glycogen contained in liver and muscles is liberated in the form of glucose sugar, the lack of which causes weariness and exhaustion. Such condition can be rapidly improved by taking carbohydrates, among which honey is the simplest, the richest and the best. In human nutrition, honey as a bee product is used mostly by laborers and athletes, who quickly refresh themselves and regain the lost strength by taking one spoonful of honey. Supporting this is the fact that first man who climbed Mont Everest, Hillary, “boosted up” his strength with a few tea-spoons of honey.

Having in mind that honey is an end product, ready to use without any further processing and that it contains two kinds of sugar which are the most natural to the human organism, this bee product has a big application in the nutrition of children and infants, especially because of its taste and biological value. With children, its positive effect on skin, a higher rate of red blood cells production, health condition in general was confirmed. Honey is also widely used in the underweight persons` nutrition. It is applied in 50-120g daily doses and can be diluted in fruit juices, water, tea or milk.

Honey as the basic bee product in human nutrition is used to make an alcoholic drink – Mead. The drink and the recipe as well are as old as the human civilization. There are data showing that it was used by the Indians, Romans and Slavs during different family, tribal and other celebrations, and at the funerals to honor the deceased. It was a custom to offer mead at the gravesite, so the deceased could build up his strength “in the other world”. There were many recipes for mead preparation, and those who prepared it were honored and respected members of the society. The basic rule is that at 1% alcohol in 100l of water 2,4kg of honey is added. Later, with the advent of wine and beer, the making of mead was removed from the focus.

Royal jelly is a substance whose contents have been a mystery for the world medicine, until recently. It is an interesting bee product, possessing the faculty of changing the life of a sexless bee larva into a perfect “queen bee”. Following this reason, many consider royal jelly to contain substances that are the consequence of the “queen bee`s” longevity, and that could be transferred to other animals, i.e. man. The test done by experts on 3000 people, who have been given a daily dose of 100mg of royal jelly over a period of 30-40 days indicated that with almost all subjects there was a rapid improvement of the biochemical contents of blood. This further resulted in their sleeping better, increased life strength, respiratory and heart problems stopping, improved psychological condition, digestion regulation and arrest of arteriosclerosis.

Bees Products in Medicine

Honey as the most widespread bee product is listed in medicine among the most valuable foodstuffs, especially because of its sugar content and other ingredients, such as enzymes, etheric oils and mineral salts.

During convalescence after serious diseases and operations, doctors give their patients a 20-40% specially processed, sterilized honey dilution, which is showing great results.

It is also known that a liver richer in glycogen is more resistant to toxins and other diseases, and it prevents protein loss. Out of these reasons, in liver disease treatments simple sugars are used: glucose, and, lately, fructose. In a free form, this sugar is found only in honey and fruit. It has been confirmed in diabetes patients that by taking fructose they lose less sugar than is the case with glucose. With smaller doses of glucose, but not fructose, (acacia honey) glycemia is increased. This leads to fructose increasing glycemia less than glucose, and is therefore used with diabetics. Most patients take the fructose therapy much better, which is shown in much better treatment effects. Of course, we have to always bear in mind that honey, and the acacia honey at the foremost contains much more fructose than glucose, in the ratio of 170:100. Honey as a medical product is also used for treating gastric ulcer or duodenal ulcer. The higher the sugar concentration in honey the better is the stomach acid allayed. The patients who have undergone this kind of treatment feel satiety and have a smaller desire for food. In the case of ulcer bleeding or in the first days of acute gastritis, honey is the essential ingredient of any diet.

With the pancreas problems, honey is the first victual given to a patient after a period of not taking any food. Honey is also used in kidney patients' nutrition, as well as with the persons with heart condition... Two to three tea-spoons of honey provide the body with more calories than one egg. This is significant for following a diet in the period of convalescence after certain serious illnesses.

Every honey, even the purest honey contains a certain quantity of pollen and royal jelly, which are considered to be the most esteemed **bee products in nutrition and medicine**. With such contents honey can be used as a useful means in the treatment of liver diseases, acute and chronic problems with respiratory ways and asthmatic bronchial inflammation, especially of an infectious origin.

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Some Natural Organic Products in Mongolia



Inonotus obliquus-Чага мөөр

Inonotus obliquus, commonly known as **chaga mushroom** (a Latinisation of the Russian term 'чага'), is a fungus in the family Hymenochaetaceae. It is parasitic on birch and other trees. The sterile conk is irregularly formed and has the appearance of burnt charcoal. It is not the fruiting body of the fungus, but a sclerotia or mass of mycelium, mostly black because of the presence of massive amounts of melanin.

The chaga mushroom is considered a medicinal mushroom in Russian and Eastern European folk medicine.



Hippophae-Чацаргана

"Seaberry" redirects here. Seaberry may also refer to plants in the genus *Haloragis*. **Hippophae-Чацаргана**

In ancient times, leaves and young branches from sea buckthorn were supposedly fed as a remedy to horses to support weight gain and appearance of the coat, thus leading to the name of the genus, *Hippophae* derived from *hippo* (horse), and *phaos* (shining)

Seven species are recognized, two of them probably of hybrid origin, ¹ native over a wide area of Europe and Asia.



Таван салаа Англиар- Greater Plantain, Латин нэр нь- *Plantago major*

Plantago major (broadleaf plantain, white man's foot, or greater plantain) is a species of flowering plant in the plantain family *Plantaginaceae*. The plant is native to most of Europe and northern and central Asia but has widely naturalised elsewhere in the world.

Medicinal use

Plantain is found all over the world, and is one of the most abundant and accessible medicinal herbs. It contains many bioactive compounds, including allantoin, aucubin, ursolic acid, flavonoids, and asperuloside. Scientific studies have shown that plantain extract has a wide range of biological effects, including "wound healing activity, anti-inflammatory, analgesic, antioxidant, weak antibiotic, immuno modulating and antiulcerogenic activity"



Алтан гагнуур буюу Англиар- Golden root, Латин нэр нь-*Rhodiola rosea*

Health effects

Research regarding *R. rosea* efficacy is contradictory. While some evidence suggests that the herb may be helpful for enhancing physical performance and alleviating mental fatigue, methodological flaws limit accurate assessment of efficacy. A rigorously-designed well reported randomized controlled trial that minimizes bias is needed to determine true efficacy of *R. rosea* for fatigue.



Бамбай буюу Англиар-Valerian, Латин нэр нь-Valeriana officinalis

Although valerian is a popular herbal medicine used for treating insomnia, there is no good evidence it is effective for this purpose, and there is some concern it may be harmful.

There is no good evidence that valerian is helpful in treating restless leg syndrome, or anxiety.

The European Medicines Agency (EMA) approved the claim that valerian can be used as a traditional herbal medicinal product in order to relieve mild symptoms of mental stress and to aid sleep. The EMA stated that there is a substantial body of evidence available that makes the traditional use of valerian plausible.



Safflower-Өвсөн гүргэмс

Safflower oil replaced animal fats in the diets of patients with heart disease, the group receiving extra safflower oil in place of animal fats had a significantly higher risk of death from all causes, including cardiovascular diseases. In the same study, a meta-analysis of linoleic acid used in intervention clinical trials showed no evidence of cardiovascular benefit.



Чихэр өвс, Англи нэр нь –Liquorice, Латин нэр нь- Radix Glucurrhizae

Liquorice root contains glycyrrhizin, which can cause high blood pressure, salt and water retention, and low potassium levels; it could also lead to heart problems. Patients who take liquorice with diuretics or medicines that reduce the body's potassium levels could induce even lower potassium levels. Taking large amounts of liquorice root could also affect cortisol levels as well. People with heart disease or high blood pressure should be cautious about taking liquorice root. Pregnant women also need to avoid liquorice root because it could increase the risk of preterm labor



Нохойн хошуу -Rosaceae The fruits occur in many varieties and were once considered the main characters for the definition of subfamilies amongst Rosaceae, giving rise to a fundamentally artificial subdivision. They can be follicles, capsules, nuts, achenes, drupes (*Prunus*), and accessory fruits, like the pome of an apple, or the hip of a rose. Many fruits of the family are edible, but their seeds often contain amygdalin, which can be converted to cyanide during digestion



Гишүүнэ-*Rheum* Many rheum species have food and medicinal uses. Some of these uses originated in Asia more than 2,000 years ago. *Rheum rhabarbarum* is used to make pies, jellies, jams, and wine. All parts of the plant contain the poison oxalic acid, but its concentration in the leaf stems or petioles used in food preparation is very low, and their tart flavor instead is caused by nontoxic malic acid. The plants also produce other compounds, including citric acid and anthraquinone glycosides, and the raw or cooked leaf blades are poisonous to humans and livestock if consumed in large enough amounts. Plants in cultivation are propagated by cutting up the crowns of larger plants and by seeds.



Багваахай *Taraxacum* The flower head is surrounded by bracts (sometimes mistakenly called sepals) in two series. The inner bracts are erect until the seeds mature, then flex downward to allow the seeds to disperse. The outer bracts are often reflexed downward, but remain appressed in plants of the sections *Palustria* and *Spectabilia*. Some species drop the parachute from the achenes; the hair-like parachutes are called pappus, and they are modified sepals. Between the pappus and the achene is a stalk called a beak, which elongates as the fruit matures. The beak breaks off from the achene quite easily, separating the seed from the parachute.



***Calendula officinalis*-Эмийн хумсан цэцэг**

Calendula officinalis often used to add color to salads or added to dishes as a garnish and in lieu of saffron. The leaves are edible but are often not palatable. They have a history of use as a potherb and in salads.

Flowers were used in ancient Greek, Roman, Middle Eastern, and Indian cultures as a medicinal herb as well as a dye for fabrics, foods, and cosmetics. Many of these uses persist today. They are also used to make oil that protects the skin



Artichoke

A powerful antioxidant named silymarin found in artichoke has shown to positively influence liver health and boost liver functions by stimulating cell regeneration and scavenging for free radicals. Another cancer-fighting phytochemical found in artichokes is cynarin, a caffeoylquinic acid that is found primarily in the leaves. It promotes the liver's bile production, which helps break down fatty foods. The polyphenol-type antioxidants found in artichokes are thought to help prevent numerous types of cancer such as breast cancer, prostate cancer, and leukemia. These antioxidants may help induce cell death (apoptosis) and slow the growth of cancer cells

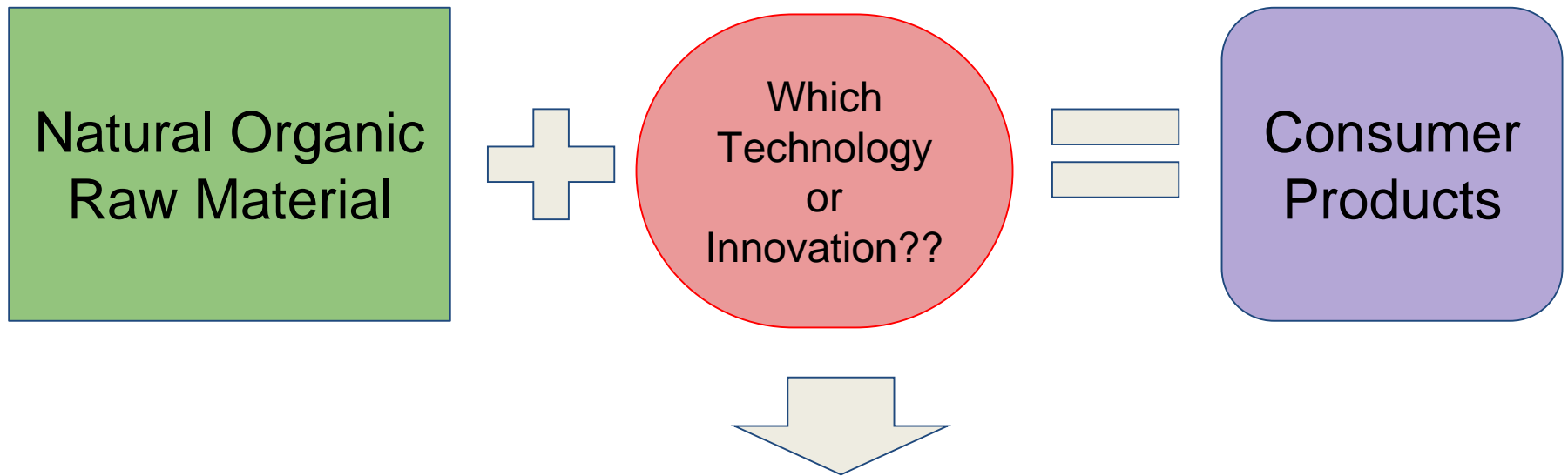


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Technology Transfer Demand



Expecting Technology Transfer Cooperation: 1



Which and what kind of technologies for organic production in Mongolia?

Expecting Technology Transfer Cooperation: 2



Desertification Problem



Plant Trees



Protection Tree walls

But.. watering issue



Demanding clean and cheap technology for watering of planted protection trees in rural area...

“Atmospheric water generator” technology for environmental recovery?

Expecting Technology Transfer Cooperation: 3



Desertification Problem



Plant Trees



Protection Tree walls



Wondering, is there any mass seed plant technology for tree or greens? (Example: Bombing seeds from the airplane, and seeds can survive and grow itself..)

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Thanks for your attention

