



COMMON
INTELLIGENCE IN
AGRICULTURE





We can sustain a better lifestyle by valuing every step of the process.

As Efes, we value our vendors, farmers, and retailers.

We have supported the production of barley and hops in Turkey for years. Thanks to these practices, we ensure the quality of our basic raw materials and support the R&D needed to differentiate our product.

While we continue the agricultural support program in Turkey, our goal is to bring the similar programs in Russia as well.

Anadolu Efes Sustainability Report, 2010

Table of Content

1. Beer and Its Raw Materials

- 1.1. History of Beer
- 1.2. Production of Beer
 - 1.2.1. Basic Ingredients of Beer
 - Barley
 - Hops

2. Efes' "Sustainable Agriculture" Vision and Strategy

- 2.1. About Efes
- 2.2. Efes' "Sustainable Agriculture" Vision: Common Intelligence in Agriculture
 - 2.2.1. R&D and subsequent achievements in malt barley
 - 2.2.2. R&D and subsequent achievements in hops

3. Commitments and Objectives

- 3.1. Efes' "Sustainable Agriculture" Commitments
- 3.2. Efes' "Sustainable Agriculture" Objectives



1. BEER AND ITS RAW MATERIALS



1.1. History of Beer

Ever since humans learned agriculture, beer has been produced and was considered as the “bread in liquid form” in ancient cultures. It is likely that many different ancient cultures discovered beer independently. Five thousand years ago beer played an important role in the lives of the Sumerians who lived in Southern Mesopotamia. In Anatolia, the Hittites cultivated wheat and barley, using them for producing malt and brewing beer. The production of beer started in Europe in the 1st century B.C. in France and spread quickly, eventually becoming a traditional drink for the Germans, the Gauls and the Scandinavians. Beer started to be a widely consumed beverage in Turkey as of 1840s at which times various varieties of beer were imported and breweries were established in Istanbul.

1.2. Production of Beer

The process of brewing has constantly improved over its long history, however the world's oldest drink never lost its completely natural characteristic. Still today beer fully consists of natural ingredients and is produced through natural processes. The basic formulation which contains barley malt, hops, yeast and water remains unchanged for hundreds of years, save for minor changes due to technological advances in production. The inclusion of hops to the early barley- and-water combination started in the 8th century and as of this date the problems of blurriness and durability have been overcome. By the help of modern methods this beverage obtained a perfect taste, color, flavor, biological shelf-life and variations.

Two basic raw materials of beer are malt (germinated and kilned barley) and hops. The first stage is the production of malt from barley. Malt, which is produced in malt production facilities is transported to beer production facilities. Malt is then milled and mixed with water to form a slurry called “mash”. Mash is gradually heated to 75C and then is filtered in order to obtain “wort” which is then sent to the boiler. Boiling is very important as hops is included to wort at this stage. After cooling, fermentation begins. The yeast reproduces and reacts with wort which creates alcohol. After the fermentation is completed, the immature beer is transferred to cooling tanks and is left to mature for 18-21 days and then is filtered. After that it is settled and transferred to tanks and to filling. Filled bottles are pasteurized in order to obtain longer biological shelf-life.



1.2.1. Basic Ingredients of Beer

Barley:

Barley is the primary agricultural raw material of beer. The species which is called wild barley today, was first discovered in Anatolia ten thousand years ago, therefore Turkey is an important gene center for barley. This plant, which has a significant role in Turkish agriculture, is grown extensively in rural areas and under dry farming conditions. Nevertheless the yield is about the world average. Efes, being fully aware of the fact that "Good beer is brewed with good malt and good malt is produced from good barley" uses the highest quality "malt barley" in its products, namely two-row white barley which has a low protein content, a prerequisite for malt barleys. There are two basic types of barley, summer barley and winter barley, and due to the climate conditions in Turkey, winter barley is grown much widely. Turkey is a difficult land for barley growing due to low rainfall. In dry years, the malt yield of barley is decreased and this results in lower sugar levels in wort in comparison to wet years.



Hops:

A turning point in beer brewery was the discovery of hops which gives aroma and bitterness to beer. Hops is used in all beers throughout the world and cannot be substituted with another ingredient. Hops is a perennial plant which has 15-20 years of economic importance. The homeland of hops is known as Slovakia and was discovered by Bohemian farmers. Hops gives beer its bitterness, flavor and taste in different levels depending on the type of beer which makes it an indispensable raw material in brewing. In Turkey, hops farming started in 1965 in the Pazaryeri district and its 11 villages in the Bilecik province.



2. EFES' "SUSTAINABLE AGRICULTURE" VISION AND STRATEGY

2.1. About Efes

Efes is 5th in Europe and 12th in the world in terms of liters of beer sold. The group has become an international power with 18 brewing facilities and 7 malt production facilities in 6 countries which are Turkey, Russia, Ukraine, Kazakhstan, Moldova and Georgia. The annual production capacity of Efes in Turkey is 10 million hectoliters of beer, 115,000 tons of malt and 300 tons of hops pellets which makes Efes the leader in the Turkish market. In addition, the products are exported to about 80 countries.

Our service staff member in Moscow fills up our products with pleasure.



2.2. Efes' "Sustainable Agriculture" Vision: Common Intelligence in Agriculture

"Sustainable agriculture" vision of Efes has been formed on the basis of the aim of sustainably procuring basic agricultural raw materials. Accordingly, with a perspective well beyond the realities of its time, Efes established in 1982 The Department of Agricultural Product Development, which has been carrying out the R&D studies for the past 25 years. As a result of these efforts, 15 new varieties of barley and 7 new varieties of hops have been developed and registered up to this date. In addition, significant advances in productivity and higher standards of quality have been achieved. A key success factor in these efforts has certainly been Efes' continuous partnership with a group of stakeholders, including the Ministry of Food, Agriculture and Animal Husbandry, several universities, TUBITAK (The Scientific and Technological Research Council of Turkey, the leading agency for management, funding and conduct of research in Turkey), and local administrations.

R&D activities in Efes are complemented with support provided to farmers. This way, the newly developed varieties are grown widely and with appropriate agricultural methods. Efes distributes certified seeds to farmers and purchases products in return and thus provides incentives to farmers in terms of both productivity and finances. Farmers are trained in the areas of sowing, irrigation, fertilizers and pesticides. As a result, higher efficiency in production stages and less consumption of natural resources are achieved.



2.2.1. R&D and subsequent achievements in malt barley

Three types of traditional methods are used in the R&D activities held under the malt factory in Çumra, Konya which are cross-breeding, introduction and selection. The following stages are production of seeds, distribution to farmers and growing them with appropriate methods. Joint projects for improvement of malt barley are currently in progress with the Ministry of Agriculture, universities and TUBITAK (The Scientific and Technological Research Council of Turkey).

R&D activities specific to malt barley resulted in 15 new registered malt barley strains. Among these are "Atılır" and "Firat" strains which, in comparison to "Tokak", the most widely used variety in Turkey, require 20-25% less water to grow. The same strains need 12-24% less electricity, 18-22% less fuel and 20-25% less water in the process of malt production (compared to Tokak, depending on the environmental and production facility conditions). Thanks to the drought resistant strains developed by Efes, malt barley is now grown in regions which were considered too dry for barley farming until not long time ago. Previously farmed mostly in Northwest and Central Turkey, this crop is now grown also in South and Southwest Turkey, regions with significantly lower rainfall and harsher winter conditions. Today, Efes procures 40% of its malt barley from these two regions.

As of 2010, 3,000 farmer families, 2,100 of which work as contract farmers, earn their living from malt barley production. Contract farmers are able to take advantage of certified seed support - which exceeds €1.5 million annually-, procurement guarantee and technical training offered by Efes. Company's economic activities in the field of malt barley agriculture create 30 million dollars worth of annual business volume.

Owing to newly developed varieties, malt barley agriculture boosted and malt barley import levels drastically dropped over the years. Namely the annual consumption of barley is about 150 thousand tons about 120 thousand of which is provided domestically. By developing and cultivating even more productive varieties, Turkey will probably be a malt barley exporter in the near future.



'It cannot be found any company like Efes' – Necati Yalamac, Farmer

2.2.2. R&D and subsequent achievements in hops

The biggest, in fact the sole purchaser of hops in Turkey, is TARBES Agricultural Products and Stockfarming A.S., a subsidiary of Efes. TARBES currently tests more than 40 hops varieties in the fields of Pazaryeri by specialized agricultural engineers for adaptation to the area. These studies have led to many new varieties of hops and those showing higher quality, productivity and adaptability are registered and put to reproduction by TARBES.

This increase in quality and productivity when combined with guarantee of purchase to farmers, cash payment, technical training and similar opportunities, gave way to significant rises in production capacity and productivity. Planting areas which were 709 decares in 1989 have increased to 2,577 decares and fresh hops purchase amounts increased from 123 tons to 1,047 tons. Land size per producer which was 3 decares 5 years ago, increased to 5 decares. Thanks to this increase in production, Efes now procures 65% of its hops requirement locally in Turkey, compared to 40% ten years ago.

Increase in productivity ensured increase in the producer's income and provided 8-9 million TL worth of added value gain to a district with a population of 6,500. As of 2011, more than 500 contract farmers earned a gross income of more than 4,000 TL per decare. It is estimated that approximately 15,000 people earn their living directly or indirectly from hops production in the Pazaryeri, Bilecik area.



3. COMMITMENTS AND OBJECTIVES

3.1. Efes' "Sustainable Agriculture" Commitments

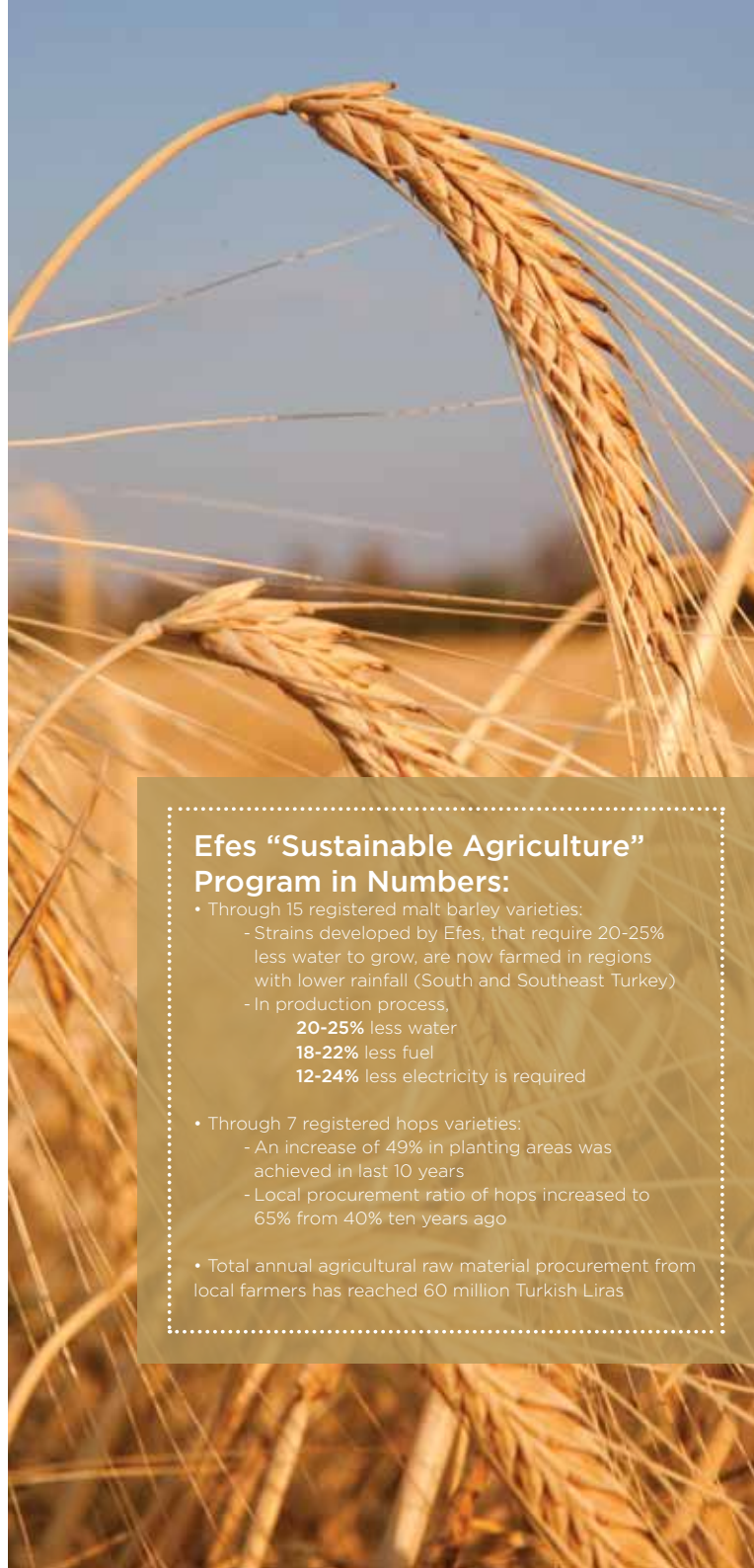
- To enhance the contribution to local economy by procuring agricultural raw materials from local producers as much as possible,
- To bolster all work standards in our value chain in order to improve added value of our products,
- To maintain product quality and to increase product variety by supporting agricultural R&D,
- To contribute to sustainable agriculture by supporting modern agricultural practices and
- To continue educational and financial support to farmers.

3.2. Efes' "Sustainable Agriculture" Objectives

Efes aims to continue its R&D efforts to develop climate and drought resistant strains that require fewer resources in production process and to increase the size of land suitable for malt barley farming. In parallel, the company targets to increase its seed production capacity and the number of its contract farmers.

Efes also aims to continue its adaptation efforts for hops and increase its local procurement ratio well above 65% through increases in crop yield and hops farming area.

Efes aims to expand its best-practice "Sustainable Agriculture" program, which includes agricultural R&D and contract farming models, and the resulting gains in "green economy" to its operations in other countries. A similar practice which has been started in Russia includes the adaptation of the highly successful experiences in Turkey to the special conditions of that country.



Efes "Sustainable Agriculture" Program in Numbers:

- Through 15 registered malt barley varieties:
 - Strains developed by Efes, that require 20-25% less water to grow, are now farmed in regions with lower rainfall (South and Southeast Turkey)
 - In production process,
 - 20-25%** less water
 - 18-22%** less fuel
 - 12-24%** less electricity is required
- Through 7 registered hops varieties:
 - An increase of 49% in planting areas was achieved in last 10 years
 - Local procurement ratio of hops increased to 65% from 40% ten years ago
- Total annual agricultural raw material procurement from local farmers has reached 60 million Turkish Liras



In fact, Efes “Sustainable Agriculture” program has now been acknowledged as one of the best practices in “Sustainable Development and Green Economy” by the Turkish Ministry of Development and will represent Turkey in the United Nations Conference on Sustainable Development (RIO+20).

