

Cotton recipes

See how organic cotton tastes

Pesticide Action Network (PAN)

Founded in 1982, the Pesticide Action Network is an international coalition of over 600 citizen groups in more than 60 countries working to oppose the misuse of pesticides and to promote sustainable agriculture and ecologically sound pest management.

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Introduction

Cotton is more than just a fibre. Cotton is the basis of live for millions of people around the world. Cotton is a plant, grown on the fields of farmers. 99% of the cotton worldwide is grown conventionally. That means: cotton follows cotton after cotton on the field – no tomato, no wheat, no sunflowers grown in between. Pests are defeated with chemical pesticides and in many of the cotton growing areas in Africa, Asia and South America malnutrition is common. Organic cotton is different. Farmers and their families who are growing cotton organically can profit from diverse advantages: no harming pesticide input, no costs for chemical pesticides, a better understanding of the agro-ecosystem, a higher price for the certified goods, intercropping products that can be sold or used to diversify and enrich the nutrition of the farmers families, healthy food for people and animals. Also the woman's contribution to the household income is higher in organic cotton production than in conventional - that is another direct benefit for the family. A successful marketing of those crops is a key to successful organic cotton production and marketing.

In order to underline that growing organic cotton is more than growing without



Cotton flowers
Photo: PAN Germany

pesticides, but is a complete change towards a sustainable and diverse growing system and to explain the dependencies between cotton(fibre)production, diversity and food security, PAN Germany provides an insight into 6 different cotton growing regions worldwide. Please come and join us on our tour of "cotton recipes around the world" and discover the treat of organic cotton and get an idea of the diversity and regional differences which are also shown in intercropped plants.

Background information - Cotton economy

Cotton is one of the most important and widely produced agricultural and industrial crops in the world. It is grown in about 100 countries and it is estimated that the crop is planted on about 2.5% of the world's arable land, making it one of the most significant in terms of land use after food grains and soybeans. Cotton is also a heavily traded agricultural commodity, with over 150 countries involved in exports or imports of cotton. 35 of the 53 African countries produce

cotton and 22 are exporters. More than 100 million family units are engaged directly in cotton production. When family labour, hired-on farm labour and workers in ancillary services such as transportation, ginning, baling and storage are considered, total involvement in the cotton sector reaches one billion people. Developing countries accounted for 68% of world production in 2002/03.¹

Cotton, unique among agricultural crops, provides food and fibre. Cotton is one of the world's most important textile fibres, accounting for almost half of all the fibres used in the clothing and household furnishing. Cotton is also used in industrial fabrics, and the by-products derived from cotton seed and stalks provide edible oil for human consumption and soap, industrial products, firewood and paper and high protein animal feed supplements. Cotton seed oil is the fifth edible oil consumed in the world.

Cotton growing – some basics

Although cotton is a perennial plant the cotton crop is sown annually and takes 5 to 6 months from sowing to harvest. It is grown in a wide range of climatic conditions in temperate, subtropical and tropical regions of all continents. Ideal conditions are in regions with long vegetation periods without frost, high temperature (ideally around 30°C), ample sunshine, and a rather dry climate. It requires a minimum of 500 mm water from rain or irrigation between germination and boll formation. There must be no rainfall during the last 2 months when the cotton is maturing.

Conventional cotton – what does it mean?

On conventional cotton worldwide are sprayed more than 20% of all insecticides used in agriculture with harmful effects on the users and the environment. Other negative effects of conventional cotton production are the use of chemical fertilisers and herbicides, which often leads to soil and water pollution. In many areas, irrigated cotton cultivation has led to depletion of ground and surface water sources. The Aral Sea is one of the sad examples: Its surface is reduced by more than 70% through the impact of cotton irrigation schemes.

Many conventional cotton farmers in developing countries are in a crisis due to decreasing soil fertility, increasing production costs, resistant pests, or low cotton prices. In recent years the agro-industry and certain researchers promote genetically modified cotton as a solution for economical and ecological problems in cotton production. The worldwide production of GM cotton is growing fast and estimated at more than 20%. But an increasing number of reports show that many success stories about GM cotton are based on very short-term studies or isolated cases. Scientists and the industry are drawing a wrong picture. Long term studies and the experiences of several years indicate that economical and ecological benefits cannot be realised by most farmers. These reports should warn the decision makers of developing countries and the development policy to introduce this technology in other developing countries.

Conventional cotton monoculture supplants food production. This problem of rivalry for the use of land and the other problems related to conventional cotton growing can be counteracted by the cultivation of organic cotton. A variety of crop rotations replaces the usual monoculture of conventional cotton cultivation and simultaneously preserves the environment and ensures that food crops are also produced.



Ripe Cotton ball
Photo: PAN Germany

Organic cotton – a successful system with high diversity

Most of the above mentioned problems could be avoided by changing the production system: Organic cotton cultivation offers an ecological and sustainable alternative. Although the world production of organic cotton is still very small compared to the conventional cotton the production is growing fast and offers opportunities for improvement for millions of smallholder farmers especially in developing countries. A new survey shows that the global organic cotton fibre supply has increased by 392% between the 2000-01 harvests and the 2004-05 crop year. Organic cotton was produced in 22 countries with Turkey growing 40%, India 25% and African countries 11 % respectively.²

An important element of organic agriculture is the appropriate crop rotation to maintain the natural soil fertility and to prevent the multiplication of pests and diseases. PAN Germany promotes organic cotton production as an alternative to pesticide intensive conventional cotton growing. But without a market there is little chance to support the southern initiatives. Therefore PAN Germany

runs an awareness raising initiative in order to inform people about the problems due to conventional cotton and to raise people's interest in organic cotton as a successful and healthy alternative. To underline that organic cotton growing is more than growing without pesticides, but is a complete change towards a sustainable and diverse growing system, we want to present examples of organic cultivation systems from 6 different regions worldwide. We keep in mind that a successful marketing of those other crops - included in the rotation scheme with cotton - is a key to successful organic cotton production and marketing.

PAN Germany wants to underline the diversity of the organic cotton growing system with its different plants and its crops by offering interesting recipes prepared with these organic agricultural products of the respective country.

Follow us to Benin, to Tanzania, to Turkey and to India, to Paraguay and Kyrgyzstan and see how organic cotton tastes.



African Peanut Stew

Ingredients

5 sweet potatoes/yams (or regular potatoes)
 1½ heads cabbage
 1 medium-sized leek
 a pint or so apple juice/cider
 3-4 tablespoons fresh ginger
 2 tablespoons salt less)
 Some water
 ½ teaspoon cayenne pepper
 4 14.5-ounce cans diced tomatoes
 1½ cups natural peanut butter

Preparation

Dice sweet potatoes into bite-sized cubes. Cover with apple juice and enough water to be 2 inches or so over potatoes. Bring to boil; add salt; add diced tomatoes. Boil again.

Dice cabbage; mince ginger; chop leek. Add cabbage, ginger, leek and cayenne to potatoes. Once it boils again (or almost), add peanut butter



Farmers with their harvest of groundnuts
 Photo: Saro Ratter

and stir until it all breaks up. If it's too thick, add more water to taste.

Notes: If you're making the whole recipe, choose a big pot.

Source: <http://www.post-gazette.com/food/20001116youngc.asp>

Region: East Africa

Example country: Tanzania

Country info

- Covers an area of 945,087 km², which is about 2.5 times the size of Germany
- Different climatic zones and famous regions (Mount Kilimanjaro (the highest point in Africa with 5,895 m); Usambara mountains; Serengeti National Park)
- It borders the Indian Ocean between Kenya in the north and Mozambique in the south.
- It includes famous islands (like Zanzibar, Pemba, Mafia)
- It is bordered by three of the largest lakes on the continent (Lake Victoria in the north (the world's second-largest freshwater lake), Lake Tanganyika in the west (the world's second deepest lake), Lake Nyassa in the southwest)

Economy / agriculture

- Various agro-ecological zones
- More than 40% of the population are engaged in the cotton industry



- Cotton has a great economic importance (especially in the western part of the country)

Crops

- Production of different cash crops like coffee, tea, sisal, tobacco, cotton

Cotton production

- 90% of cotton production is located in the western part of the country
- Cotton is the second largest export commodity after coffee (15 to 20 % of the foreign exchange earnings (in years of average production))
- In 2005 the country produced 125.193 tonnes of cotton lint³

Organic Cotton

- The certification is organised with an Internal Control System and external inspection by a certification body from Switzerland.
- The production started in 1994 / 95 with Remei AG (Swiss company operating organic cotton projects in Tanzania and India), which supports Fair Trade practices (more info at <http://www.biore.ch/tanzania.html?&L=1>)
- Organic cotton is grown in the Meatu district of Shinyanga region.
- Only low intensity in conventional cotton in this area. Most conventional cotton farmers make little use of synthetic insecticides and don't use chemical fertilizers or herbicides.
- Primary benefit of growing organic cotton is social and economic development by promoting sustainable agricultural production and diversification. Growing organic cotton helps to improve the food security of the rural population and reduces malnutrition among children, which is still quite high in the area with over 40%.
- Key pest of the area: American Bollworm (*Helicoverpa armigera*)
- Sunflower as trap crop (was introduced in 1994 by the project)
 - attract the pest (like American Bollworm) and natural enemies like ants
 - is a cheap and efficient preventive pest control method, which is copied by many conventional cotton growers in the area



Photo: Saro Katter

- sunflower seed production is hardly reduced by the pest and offers an additional income for the cotton growers
- land preparation: normally with ox-plough
- Average cotton acreage per family: 4 ha
- Labour peaks: weeding and handpicking
- Harvest: May to August with several turns because of different degrees of ripeness
- Organic cotton production
 - 2005: 1,400 bioRe farmers reached 3,500 tons
 - 2005/06: bioRe contracted 1,600 families in 11 villages⁴

Typical crop rotation

1. Cotton
2. Sorghum / Maize / Sesame
3. Pigeon peas / Chick peas / Mung beans / Groundnuts

Recipes

Ugali – Cornmeal Mush

One of the foods most frequently used in both East and West Africa is a mush or gruel made by pounding fresh corn and squeezing out the cornstarch. When it is cooked in boiling water to a gruel consistency and used as a breakfast cereal it is called Uji (Ogi, in West Africa). When it is cooked to a thicker consistency, so that it can easily be rolled into a ball, it is called Ugali (Agidi in West Africa).

As a substitute you can use cornmeal grits or buckwheat grits. Africans use any fine white cereal such as Farina or Cream of Wheat. These cereals are surprisingly tasty when served with meat and poultry gravies. Stone-ground white cornmeal can be purchased in specialty food shops.

For added flavour, try cooking cornmeal grits, farina, or any cereal in chicken or beef stock instead of water. The cereals absorb the flavour of the stock and make an excellent accompaniment for meats. Rice and couscous, that wonderful semolina grain used so abundantly in North Africa, are delicious when prepared in this way. In Swahili any thick mush is called Ugali. There is a light Ugali made with cornmeal flour and there is a dark Ugali made with millet flour, and often groundnuts (peanuts) are ground in with the mush.

Ingredients (8 portions)

1 quart water or chicken broth

1 cup cereal (corn, wheat) or millet flour

1 tsp salt

Preparation

Boil rapidly 1 quart water / chicken broth in a 2-quart saucepan. Add 1 tsp. salt and 1 cup any fine white cereal. Swirl the cereal into the boiling water and cook according to package directions to a



Blossoms of organic sesame in Mali .

Photo: Helvetas, Mali

thick heavy mush. Keep warm over hot water (in a double boiler) until ready to serve.

Source: <http://www.africa.upenn.edu/Cookbook/Tanzania.html#Recipes>

Region: South Asia

Example country: India

Country info

- Seventh-largest country by geographical area
- It has one of the most diverse wildlife, geographical terrain and climatic systems in the world.
- It is the second most populous country in the world with over one billion inhabitants
- It has twenty-two official languages and Hindi and English are the official languages of the Union government.
- Climate: India as a whole is considered to be a tropical country. But due to the country's large geographic size and varied topography many regions have their own microclimates. The country's climate is strongly influenced by the Himalayas and the Thar Desert, the mean climatic conditions in Kashmir (extreme north) are very different from those in the extreme south.

Economy / agriculture

- India is the fourth largest economy in the world and, at 6.3%, it is among the fastest growing.5
- India's economy was primarily agriculture, forestry, fishing, and textile manufacturing in 1947 and transformed to major heavy industry, transportation, and telecommunications industries by late 1970s. Central government planning in these years led to economic reforms and more private-sector initiatives in 1980s and 1990s.
- Around 45 percent (136 million hectares) of the total land is cultivated, 27 percent is double cropped, which effectively gives India 173 million hectares of cultivated land.



- Another 5 percent (15 million hectares) is permanent pasture land or planted in tree crops or groves.
- The farmers in India are smallholders, because large landholders divested in the 1970s. Rice, wheat, pulses, and oilseeds dominate the production, but millet, corn (maize), and sorghum are also important; other important commercial crops are sugar (India is world's largest producer), cotton, jute.
- The Green Revolution brought technological advances to India and improved high-yielding variety seeds, and increased fertilizer production and irrigation between mid-1960s and early 1980s.
- Agricultural products constitute around 18 percent of the total exports.⁶

Crops

- Cash crops: cotton, and also wheat, sugar cane or chilli (farmers do not completely depend on the income from cotton production)
- Crops to improve the soil fertility: pulses like chickpeas, pigeon peas, mung beans and groundnuts⁷

Cotton production

- With over 5000 years of history, India's cotton production sector is a major and diverse producer
- A wide spectrum of cotton varieties with different staple lengths from short to extra long staples are grown.
- Currently, India is responsible for roughly one-fourth of the planted cotton area in the world with about 8.8 million hectares planted by about 4 million cotton growers.
- The production is concentrated over three zones (the Northern Zone comprising the states of Punjab, Haryana and Rajasthan; the Central Zone comprising Maharashtra, Madhya Pradesh and Gujarat; the Southern Zone comprising Andhra Pradesh, Karnataka and Tamil Nadu) which account for around 99% of the cotton produced in the country
- Cultivation is done by hand hoeing or with ox plough. In central India summer cotton is sown in May (if there is a possibility of irrigation), otherwise Monsoon cotton sown in June (when sufficient rain has fallen)

- Summer cotton harvested in October and Monsoon cotton in March.



*Organic Cotton Production in India
Photo: Remei AG*

Organic Cotton

- The certification is organised with Internal Control Systems and external inspection by EU accredited certification bodies.
- First organic cotton project in 1991 in Maikaal: The project currently collaborates with more than 2.000 smallholders and employs more than 50 people. The majority works as agricultural extension officers and advisers to farmers.
- Farmers receive trainings and advice in their villages and also directly on their farms
- Field visits of the extension team support new farmers during the conversion period to organic agriculture and long-term farmers to continuously improve and develop their organic farming practices.
- Foundation of the farmers organisation bioRe® Association in 2003
- The purpose of the Association is to support farmers in agricultural matters and to empower the local community. They also focus on the environment in which farmers are living (in order to better understand their living situation and to specifically provide support through various projects)
- There is specific promotion of the agricultural education in the training centre (opened in April 2005), which aims at the development and further improvement of organic farming and serves as a platform for farmers to exchange agricultural practices and experiences with other farmers and agricultural experts. It also increases the awareness for social issues such as health

and hygiene, community development and interaction with land labourers.

- Most of the organic cotton farmers belong to middle and poor class (small farms) and have an average holding of 4 ha or less.
- Literacy levels are increasing slowly and extensive training on Organic Cultivation is needed.
- About 25% of the world organic cotton production are produced by Indian organic cotton projects, with three major organic projects:
 1. AGROCEL, Mandvi, Gujarat India, <http://www.agrocel-cotton.com/>
 2. Maikaal bioRe (India) Ltd., <http://www.biore.ch/indien.html?&L=1>
 3. Pratibha Syntex Limited / Vasudha, <http://www.pratibhasyntex.com/organic.htm>
- and other smaller projects:
 1. Eco Farms, Yavatmal, Maharashtra, <http://www.ecofarmsindia.com/contactus.htm>

2. Krämer & Holzer GbR, Project Naturstolz, 23/24, Amber House, 13/2, M.G. Road, Indore - 452 001 M.P.
<http://www.naturstolz.com/home.htm>

3. Kanchan International, Gurgoan, New Delhi

4. Vidarbha Cotton Association, Yavatmal, Maharashtra, India

5. Mahima Organic Technology

- Research analyse on organic cotton: comparison of organic and conventional farms over two cropping periods (2003-2005)⁸. The research indicates that organic cotton farming can be a viable option to improve income and reduce vulnerability of smallholders in the tropics.

Typical crop rotation

Cotton, Soybean, Sorghum, Maize, Pulses, Chilli, Sugarcane, Pigeon pea

Recipes

Dhaal soup - Indian Lentil Soup (Dal Shorva)

An inexpensive, easy-to-make and delicious soup. The chicken stock can be replaced with vegetable stock for a vegetarian variety.

Ingredients

1 ½ cups pigeon pea lentils, mung beans or red lentils or yellow lentils

1 teaspoon turmeric

½ teaspoon cayenne pepper

1 teaspoon cumin

¼ teaspoon cardamom

2-3 curry leaves or bay leaves

6 cups chicken stock or vegetable stock (preferably home-made)

3 tablespoons vegetable oil or ghee

2 teaspoons mustard seeds

2 garlic cloves, finely chopped

salt and pepper

lemons, sliced

Preparation

- Rinse the beans or lentils.
- Bring to a boil with the stock, turmeric, cayenne, cumin, cardamom and curry/bay leaves.
- Let simmer until the beans or lentils are very soft (ca 30 minutes).
- If using bay leaves, remove them now. Curry leaves can be left in the soup.
- Mix the soup slightly to a not too smooth consistency (or mash the lentils/beans with a ladle).
- Sautee the garlic and mustard seeds lightly in the fat and add to the soup.
- Let simmer for another 5 minutes.
- Remove all yellow and white peel from the lemon slices and place in a soup tureen or in individual soup plates.
- Serve hot with pita or paratha bread.

Region: South America

Example country: Paraguay

Country info

- Paraguay is located in the heart of South America in the region of the “Acuífero Guarani”, one of the worlds largest water reserves. It has a total area of 406,750 km² (slightly smaller than California), including 397,300 km² land area and 9,450 km² water area⁹.
 - The Paraguay river divides the country into two large areas. The western area is the flat deposit of the Gran Chaco, a vast plain which extends from Paraguay into Bolivia, Argentina, and Brazil. This region is characterised by grasslands, swamps, and sparse bush coverage.
 - The eastern area, which consists mainly of plains with rainforest-like vegetation and is drained by the tributaries of the rivers Paraguay and Paraná.
 - Climate in the Paraneña region: this region has subtropical and humid climate, with abundant precipitation throughout the year and only moderate seasonal changes in temperature. There are only two distinct seasons: summer from October to March and winter from May to August. No part of the Paraneña region is entirely free from the possibility of frost and consequent damage to crops, and snow flurries have been reported in various locations.
 - Climate in the rest of Paraguay: mild winters (July is the coldest month), with a mean temperature of about 18°C in Asunción and 17°C on the Paraná Plateau, tropical climate in the Chaco and 3-16 days with temperatures below freezing point. The Southern Hemisphere's summer (northern winter) is warm with sirocco winds blowing out of the northeast and. The Southern Hemisphere's winter on the other side is cold with pampero wind from the South Atlantic blowing across Argentina and being deflected north-eastward by the Andes in the southern part of that country. These opposite prevailing winds bring about abrupt and irregular changes in

the usually moderate weather (because of the lack of topographic barriers within Paraguay).



Economy / agriculture

- Paraguay has a limited economy predominantly based on agriculture, livestock production and forestry. Cattling raising remains a key economic activity.
 - Agriculture accounted for 29% of GDP in 2001
 - An estimated 65% of the population was living below the poverty line in 2001
 - More than 200.000 families depend on subsistence farming activities.¹⁰

Crops

- Export crops are soybeans, cotton, tobacco, coffee, sugarcane and processed oils from oil containing plants, such as cottonseed, soybean, peanut, coconut, palm, castor bean, flaxseed and sunflower-seed¹¹

Cotton production

- Paraguay is a large cotton producer
 - Cotton is the main cash crop for the small farmers in the country
 - about 300.000 small farmers in the country (almost each one has some conventional cotton)
 - production of 87,091 tonnes of cotton lint in 200512

Organic Cotton

- The organic production area is mainly in the Northeast Region: Dpto. of San Pedro, but also parts of Dpto. of Caaguazú and Dpto. of Guairá.

- The main organic cotton project is the ARASY project (started in 2002) with currently 360 certified organic farmers (2006) and smallholders with about 10 hectare of land and 1 hectare of organic cotton in each one.
- Some of them share the certification for organics with the largest sugar cane factory in Paraguay (Azucarera Paraguaya) which means that there is mainly organic sugar cane in their farms.
- The farmers in this project have a diverse production, because ARASY also buys other organic products from the farmers.
- The company also works with non-certified farmers in the community with natural products (above all sesame seeds)
- Normally the growing of cotton is family work, but at the harvest the farmers contract additional labour.
- Women are involved in all activities of cotton growing and harvesting on the farms.
- Field production is done by many hundreds of small farmers in association with ARASY and is managed through group certification based on contracts, commitment statements and strict internal control systems.
- ARASY supports the small farmers through training programs, credits and extra payment for organic quality and certified seed production.
- Cultivation is manual and the harvest is hand picked. The harvest season is in the between January – March.
- The fibre length contains fibres from medium to long staple.¹³
- Link: <http://www.arasy.com.py/raw.php>

Typical crop rotation

Cotton

Grains (sesame, corn), beans and herbs (stevia, lemon verbena, bitter orange and yerba mate)

Recipes

Black Beans and Rice

4 portions,
preparation Time: 0:45 h

Ingredients

1 med chopped onion
 1 stalk diced celery
 1 sm diced red pepper
 1 c long-grain white rice, rinsed and drained
 14 ozs broth
 1 tsp turmeric
 1 tsp oregano
 1 tsp salt
 1 c egg substitute, liquid – scrambled
 15 ozs black beans, canned and heated

1 tsp crushed red pepper
lemon wedges and tabasco to taste

Preparation

Saute onion 2-3 minutes; add celery, bell pepper and rice. Cook stirring until rice turns pale, 2-3 minutes. Reduce heat to low. Add broth, turmeric, oregano and salt. Cover and cook until rice is tender and all liquid is absorbed, 15-20 minutes. Remove from heat and fluff with fork. Drain heated black beans and mix with rice. Top with scrambled eggs and sprinkle with crushed red pepper. Serve with lemon wedges and tabasco. Serve sweet lemon verbena infusion to drink.

Region: Central Asia

Example country: Kyrgyzstan

Country info

- Kyrgyzstan is a central Asian country with incredible natural beauty and proud nomadic traditions. In 1864 it was annexed by Russia and achieved independence from the Soviet Union in 1991. It is a poor, mountainous country with a predominantly agricultural economy.
- The climate is chiefly influenced by the mountains, Kyrgyzstan's position near the middle of the Eurasian landmass and the absence of any body of water, large enough to influence weather patterns. Its continental climate has significant local variations.
- It is a generally sunny country, receiving as much as 2,900 hours of sunlight per year in some areas, although the mountains tend to collect clouds and block sunlight (reducing some narrow valleys at certain times of the year to no more than three or four hours of sunlight per day).
- Precipitation:
 - 2,000 millimetres per year in the mountains above the Fergana Valley
 - less than 100 millimetres per year on the west bank of Ysyk-Köl.¹⁴

Economy / agriculture

- Agriculture still is the main sector of the Kyrgyz economy.
- Industrial production dropped significantly during the 1990s.
- Soil fertility decreased, because many farmers only use nitrogen fertilisers (compound fertilisers are sold at exorbitant prices).

Crops

- Main agricultural products: cotton, tobacco, wool, and meat
- Only tobacco and cotton are exported in important quantity

Cotton production

- Cotton has been grown for a long time and the cotton production accounts for over 40% of the agricultural value added in Kyrgyzstan.
- The production and processing of cotton has been growing steadily.
- 2004: 120,000 tons of seed cotton were produced on an area of 46,000 hectares
- Problems in cotton cultivation are a high pest pressure (e.g. spider mites) because of monocropping, the use of unlicensed pesticides, which are still available and health risks (for men and animals) because of polluted soil and drinking water.



Organic cotton

- Organic Cotton Production and Trade Promotion by the Swiss development organisation Helvetas, which started in 2003
- The project aims at promoting organic agriculture in Central Asia, at developing a national or international market for organic cotton and other organic agricultural products and at enabling committed farmers to support their families from organic farming.
- Organic cotton cultivation entails crop rotation.
- Implementation of a premium as well as the cultivation of various different crops.
- The main task in the first year was to train staff and farmers. In 2005 it was the production of organic fertilisers, the cultivation of rotation crops and the establishment of a farmers' organisation.
- In 2005, numerous field trials were carried out in which alternative rotation crops (e.g. buckwheat, fodder maize, sugar maize, popcorn, three different varieties of beans, lentils and cucumbers) and mixed cultivation

was tried (cotton/beans, cotton/peanuts, cotton/maize). It was also the year in which a women's group has been founded, who is in charge of the marketing and processing of rotation crops.

- Alternative crops are water and sugar melons and red beets because of their high profitability.

Recipes

Simple Borsch

Though Borsch is more known for Russia, it is also served in Kyrgyzstan. Borsch is a soup, but it is 'Borsch', no one calls it soup in Russia. History says that Borsch was and is one of the most popular dishes in Russia. It appeared at the end of the 18th and 19th centuries. The main ingredients are red beets and broths made from meat or fish, mushrooms, or smoked sausages. Plus, people used to and do use cabbage, onions, carrots, potatoes, tomatoes, spinach, and sorrel. The sour taste it can have is because of the vinegar. Our ancestry ate borsch with pancakes, different porridges, and pies. Vegetarian and poor people made borsch without any meat, only with vegetables.

Ingredients

*400g beef
2 average red beets
200g cabbage
4 little potatoes
1 carrot
2 tomatoes
1 tsp. vinegar
Salt and pepper, to taste
Parsley
Dill
Spring onions*

- Beans can be recommended for their high value for soil improvement and nitrogen accumulation.¹⁵

Typical crop rotation

- water and sugar melons, red beets, beans, buckwheat

Preparation

Preparing meat broth:

Put beef into a large saucepan and cover with 3 litres cold water. Bring to a boil and reduce heat. Remove the grease froth from the broth surface with a spoon. Add one onion. Cook at low heat for 1-2 hours.

Simmering Red Beets:

Melt 1 tablespoon margarine in a saucepan. Cut red beets into thin sticks and add them into the cooking pot. Add tomato paste or sliced tomatoes. Simmer at low heat for 1 hour. If there is not enough liquid, add some broth. Add vinegar.

Pan-frying Vegetables:

Melt 1 Tablespoon margarine in a frying pan. Add chopped onions and carrots that are cut into thin sticks. Cover and sauté for 15 minutes, stirring occasionally.

Heat broth to boiling. Add chopped cabbage and potatoes that are cut into bars. Cook for 5 minutes. Add sauté and cook another 10 minutes. Add simmered red beets. Cook another 5 minutes. Add salt and black pepper. If you like garlic, you can add about 5g grated garlic. Borsch is served with sour cream.

Serve water melon as dessert.

Source:

<http://www.netcooks.com/recipes/Soups/Simple.Borsch.html>

Region: Europe - Eurasia

Example country: Turkey

Country info

- Turkey is located in South-eastern Europe and South-western Asia (that portion of Turkey west of the Bosphorus is geographically part of Europe). It borders the Black Sea, between Bulgaria and Georgia and the Aegean Sea and the Mediterranean Sea, between Greece and Syria
- The land has an area of 780,580 km², bordering countries like Armenia, Azerbaijan, Bulgaria, Georgia, Greece, Iran, Iraq and Syria.
- The climate is temperate, with hot, dry summers and mild, wet winters; harsher conditions are found in the interior of the country

Ecology / agriculture

- Varied ecology, which allows farmers to grow many crops.
- There is mostly cereal production (bulk of the arable land and the greater part of the farm population) with the major cereal being wheat followed by barley.
- Other grain crops are rye, millet, corn, and rice.

Crops

- Turkey exports cereals, pulses, industrial crops, sugar, nuts, fresh and dried fruits, vegetables, olive oil, and livestock products
- Turkey exports mainly dried fruit and nuts, cotton and tobacco to the European Union and the United States, and fresh fruit and vegetables to the Middle East.

Cotton production

- Cotton is the major industrial crop in terms of value and supplies seed for vegetable oil and fibre for textiles, a major export.
- Cotton cultivation increased rapidly in the 1950s and 1960s following the introduction of new varieties and the extension of irrigation.

- The main cotton cultivation areas are on the coastal plains of the south and south-west, where yields have exceeded international averages since the 1950s.
- The annual output of cotton lint was about

145,000 tons in the early 1950s and 600,000 tons in the early 1990s.¹⁶

- The average annual output during 1999-2001: 857,000 tonnes of raw cotton¹⁷
- The maximum production in 2002 with 909,879 dropped to 772,929 tonnes in 2005.¹⁸



*Harvesting a cotton field in Turkey
Photo: Lichtschatz Projekte, Germany*

Organic cotton

- The organic cotton production in Turkey was started in the late 1980s and became one of the largest organic cotton growers in the world.
 - There are two main growing regions, Aegean / Izmir region in the West and Kahraman Marash in Southeast Turkey.
 - The Boweevil project has been involved in growing cotton since 1989, in Southeast Turkey in Kahraman Marash, and Western Turkey - the Aegean region, near Tire and Golluce. The number of farmers included in the project is 38 farmers and the number of villages involved is 8. The farms range from large scale to small size farms and they are generally organized by agricultural project managers and contact farmers.
 - The Mavideniz project started in 1992 its first organic cotton projects in West and South Turkey with a few farmers. Since 1998 it expanded even to the South-eastern



*Inspection of organic cotton production, Turkey
Photo: Lichtschatz Projekte, Germany*

Anatolian region in Turkey. Currently, Mavideniz has contracts with 14 farmers that own and organically cultivate approximately 18,000 ha land.¹⁹

Typical crop rotation

Cotton, wheat, barley, corn, alfalfa, potato, tomato, cucumber

Recipes

Turkish Salad

Ingredients

- 1 romaine lettuce hearts
- 1 green bell pepper
- 1 red bell pepper
- ½ cucumber
- 4 tomatoes
- 1 red onion
- 8 ounces feta cheese, crumbled
- Black olives, to garnish

Dressing Ingredients

Dressing ingredients

3 tablespoons olive oil
3 tablespoons lemon juice
1 garlic clove, crushed
1 tablespoon fresh parsley, chopped
1 tablespoon fresh mint, chopped
Salt
Black pepper, freshly ground

Preparation

Chop the lettuce into bite-size pieces. Seed the peppers, remove the cores and cut the flesh into thin strips. Chop the cucumber and slice or chop the tomatoes. Cut the onion in half, then slice thinly.

Place all chopped salad ingredients in a bowl and sprinkle the feta over the top and lightly toss together.

For the dressing, blend together the olive oil, lemon juice and garlic in a small bowl. Stir in the parsley and mint and season with salt and pepper to taste.

Pour the dressing over the salad, toss lightly and serve garnished with a handful of black olives.

Source: <http://www.recipezaar.com/173720>

Turkish Flatbread (Pide)

Ingredients

4 teaspoons active dry yeast
½ teaspoon sugar
½ cup water
½ cup unbleached all-purpose flour
3 ½ cups bread flour
1 teaspoon salt
3 tablespoons olive oil
1 cup lukewarm water, plus
1 tablespoon lukewarm water

Preparation

Dissolve the yeast and sugar in ½ cup warm water, and let stand in a warm place 10 minutes until frothy.

Stir in the ½ cup of flour, cover with plastic wrap and let rise 30 minutes.

To finish the dough, put the 3 ½ cups of flour in a large bowl, and make a well in the center.

Put in the yeast-and-sugar mixture, salt, olive oil, and 1 cup plus 1 tablespoon of lukewarm water.

Gradually work in the flour to make a soft and sticky dough. Knead the dough on a floured surface for 15 minutes. The dough will be very

sticky at first, but as you knead, it will gradually cease to stick to your hands.

You should have a damp and very springy dough that offers no resistance to kneading. Put the dough in a oiled bowl, cover with plastic wrap, and let rise 1 hour, until well swollen.

(You can refrigerate the dough at this point until you're ready to use it.) Put the dough on a lightly floured surface and roll into a log.

Cut into 8 equal pieces, and roll each one into a tight ball. Place the balls on a floured surface, and let rest 30 minutes under a towel.

Preheat the oven to 450 degrees, and if you have them, heat tiles 30-40 minutes before baking.

Roll one ball of dough on a floured surface with a rolling pin into a circle and Brush the top with olive oil. Bake 5 or 6 minutes, and repeat the process with the remaining dough balls.

As the pide come out of the oven, stack them in a large pan and keep them covered until all are baked. Serve the pide hot.

They also can be reheated wrapped in foil.

Source: <http://www.recipezaar.com/55428>

Sources and comments

¹ Source: ICAC

http://www.icac.org/cotton_info/speeches/estur/2004/cotton_commodity_profile.pdf

² Calculation based on Simon Ferrigno, 2006, “ORGANIC COTTON FIBER REPORT Spring 2006” available at www.organicexchange.org

³ Source: United States Department of Agriculture, <http://www.indexmundi.com/tanzania/agriculture/cotton.html>

⁴ Source: Saro G. Ratter, 2006, Presentation at BioFach congress

⁵ Source:

http://www.weforum.org/site/knowledgenavigation.nsf/Content/_S15089?open&country_id=1

⁶ Source:

http://www.indianchild.com/indian_economy.htm

⁷ Source: Organic Exchange

⁸ More info see: FiBL:

<http://www.fibl.org/english/index.php>; WWF: <http://www.wwf.org/>; SDC: <http://www.sdc.admin.ch/>

⁹ Source:

<http://www.countryreports.org/country.aspx?countryid=192&countryName=Paraguay>

¹⁰ Source:

<http://www.nationsencyclopedia.com/Americas/Paraguay-ECONOMY.html>

¹¹ Source: [http://lcweb2.loc.gov/cgi-bin/query/r?frd=cstdy:@field\(DOCID+py0063\)](http://lcweb2.loc.gov/cgi-bin/query/r?frd=cstdy:@field(DOCID+py0063))

¹² Source: United States Department of Agriculture: <http://www.indexmundi.com/paraguay/agriculture/cotton.html>

¹³ Sources: Organic Exchange, <http://www.organicexchange.org/company.php?category=Arasy&t=b2b&x=19&y=7> and Arasy <http://www.arasy.com.py/raw.php>

¹⁴ Source: CIA

<http://www.cia.gov/cia/publications/factbook/geos/kg.html>

¹⁵ Source: Helvetas:

http://www.helvetas.kg/pr_cotton_en.shtml

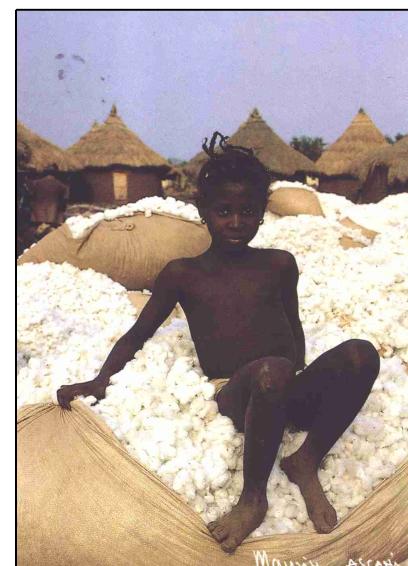
¹⁶ Source: U.S. Library of Congress, Country Studies, <http://countrystudies.us/turkey/61.htm>

¹⁷ Source: ICAC Bulletin (CD-Rom) June 2002 <http://www.fao.org/docrep/006/y5143e/y5143e1e.htm>

¹⁸ Source: United States Department of Agriculture, <http://www.indexmundi.com/turkey/agriculture/cotton.html>

¹⁹ Source: Organic Exchange

www.organicexchange.org and Mavidenz



Cotton harvest in an African village