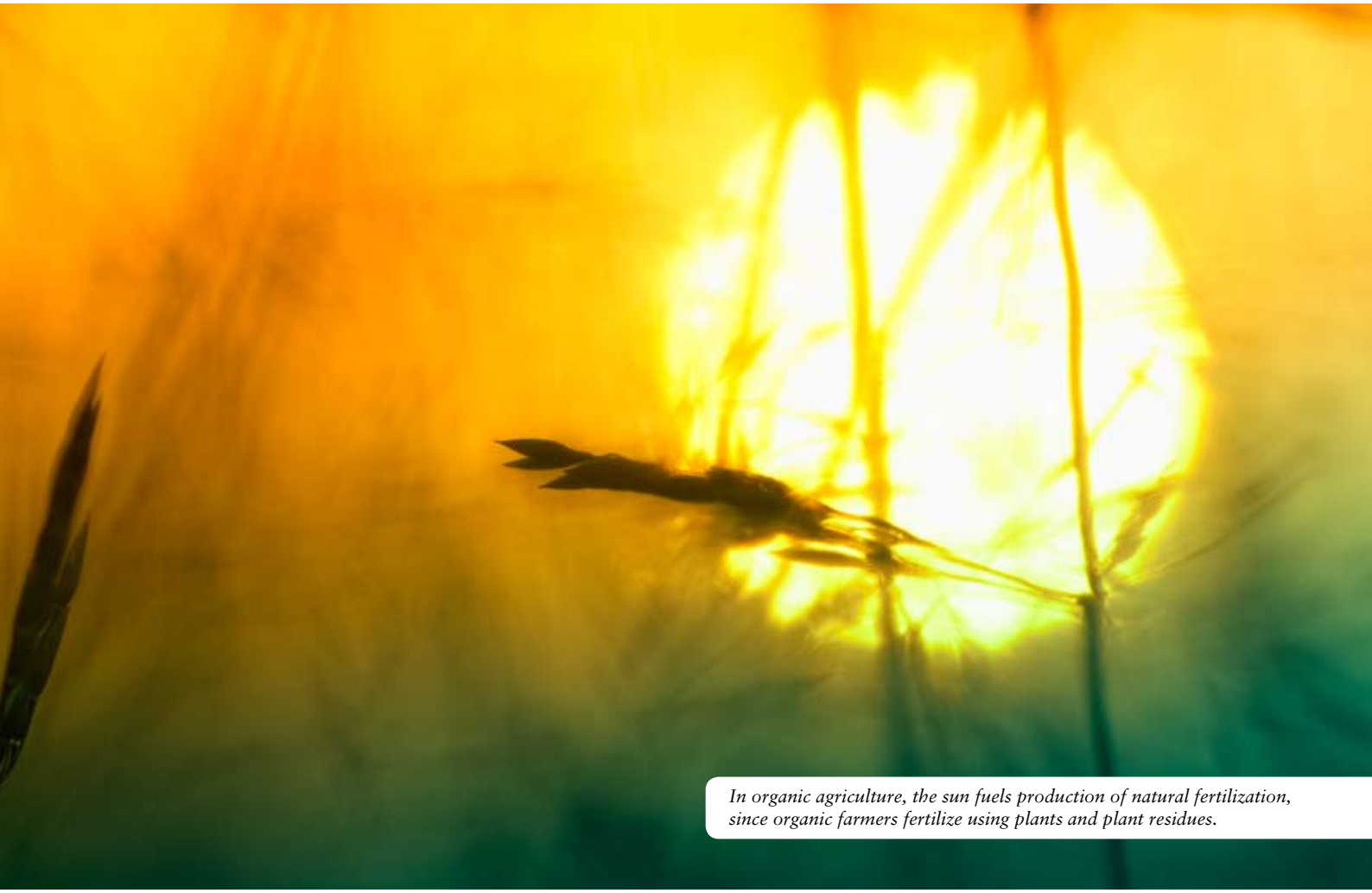
focus: Climate



In organic agriculture, the sun fuels production of natural fertilization, since organic farmers fertilize using plants and plant residues.

The Organic Advantage

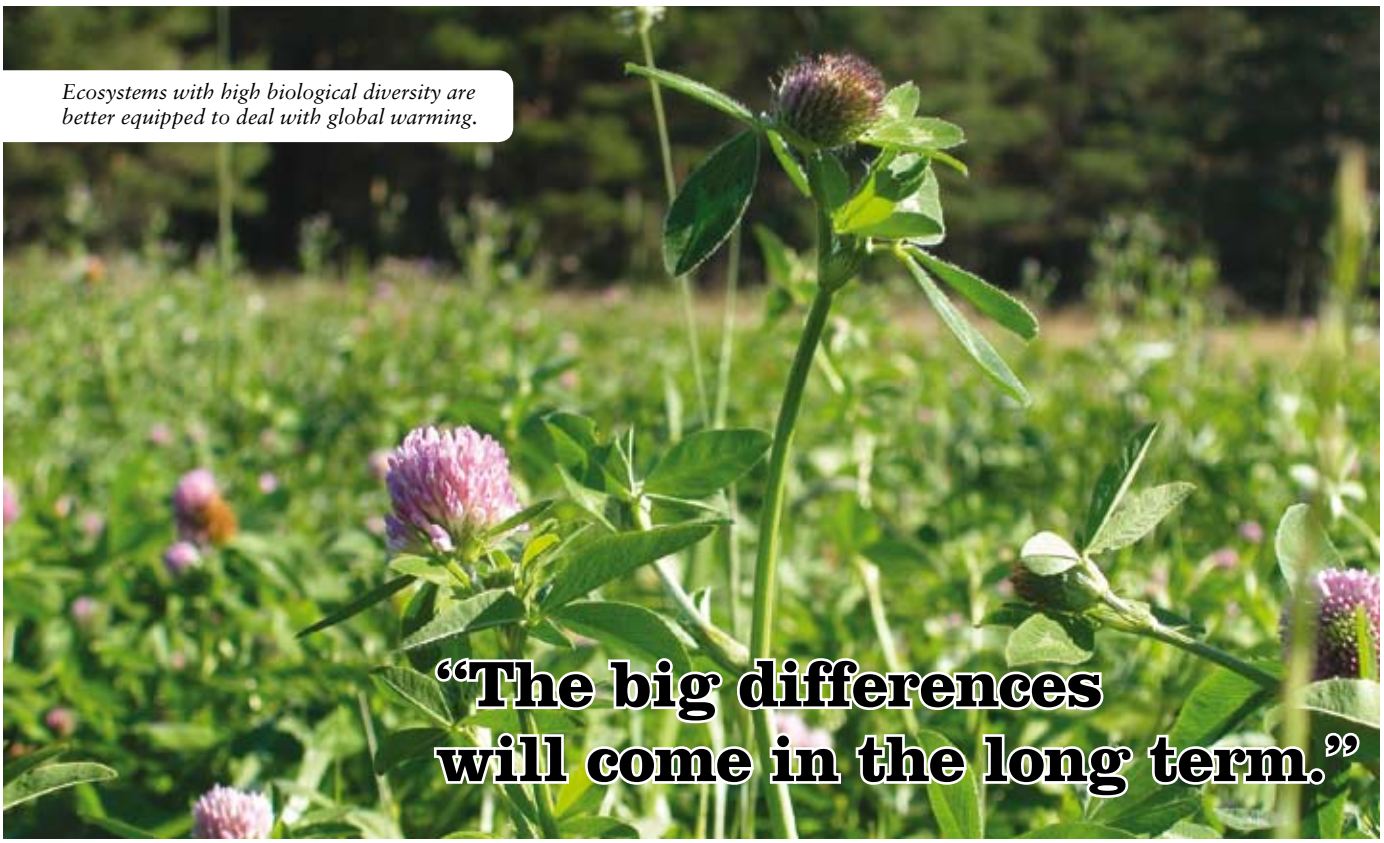
Global warming is one of humanity's greatest challenges in modern times. Extensive adaptations to our lifestyle and our way of producing food will be required.

"Organic agriculture has come part of the way and has a head start," states researcher Johanna Björklund, Researcher at the Centre for Sustainable Agriculture at the Swedish University of Agricultural Sciences in Uppsala. "Through its solar driven production of fertilizer and species diversity, organic production has a head start."

Food production accounts for almost 20% of the world's emission of gases that influence the climate. Three of them are especially important: carbon dioxide, nitrous oxide and methane.

Nutrients are removed from fields during harvesting. New nutrients must therefore later be added to the soil. Conventional farmers add artificial fertilizers, but the production and transport of artificial fertilizer consumes large amounts of fossil fuels that release carbon dioxide. In addition, nitrous oxide is released during the production of the nutrient nitrogen used in artificial fertilizer.

In organic agriculture, it is the sun that fuels production of nitrogen fertilizer. Organic farmers grow clover and other legumes that have bacteria on their roots that capture nitrogen from the air and convert it to a form of nitrogen that can be absorbed by plants. This is a sus-



Ecosystems with high biological diversity are better equipped to deal with global warming.

“The big differences will come in the long term.”

Photography: Eva-Lena Rådberg

tainable fertilizer production fueled by the sun. Therefore, in organic production legumous plants must be grown at regular intervals. This is one reason why, in organic production, the amount of food produced per unit of area is lower than in conventional production at the northern latitudes of Scandinavia. On the other hand, organic production is more energy self-sufficient.

This is one of the contradictions that should be taken into consideration in a holistic assessment from the perspective of global warming. Another contradiction is that cows burp methane gas when they eat grass and clover and that organic cows eat more grass and clover than conventional cattle, therefore organic cattle likely burp more methane gas. On the other hand, the more grass that is grown, the more carbon dioxide that is bound to the soil as a larger root system is developed when grass is allowed to grow for several years. So what is the end result?

“In the short-term, the impact on climate from organic production is not so much less,” states Johanna Björklund, Researcher at the Centre for Sustainable Agriculture at the Swedish University of Agricultural Sciences in Uppsala. She believes that the significant differences will come in the longterm. The reason is that a lot of vegetation residues and manure are ploughed into the soil in organic agriculture. This material is broken down in the soil and supplies the next crop with nutrients, while a small amount of residue called organic matter remains in the soil. The organic matter contains carbon absorbed from the air when the plants were alive. The fertilization methods used in organic production make it probable that the organic matter level increases over time and therefore more carbon dioxide is removed from the air.

However, it isn’t just the greenhouse gases that determine how sustainable agriculture is from a climate perspective. Biological diversity is also important.

“Production should be based on more species in order to cope with future changes,” explains Johanna Björklund and notes that biological diversity increases by 30% with organic production.

Johan Rockström, professor and CEO of The Stockholm Resilience Centre draws a similar conclusion.

“An ecosystem, for example a forest, lake or field may appear healthy to the naked eye, but can be close to collapse and thus not survive stress such as drought or a storm,” he states and explains that forests with high biological diversity survived hurricane Gudrun much better due to a greater resilience.

How well an ecosystem copes with global warming depends above all on three factors: resistance to damage, adaptability and transformation. The scientific term for this is “resilience”. Adaptability determines if an ecosystem can adjust after a climate change and transformation refers to the ability to recover if the system collapses.

“Resilience requires diversity,” states Johan Rockström and explains that organic production has a greater resilience primarily for two reasons:

“It requires varied crop rotation, which is when a sequence of different crops are grown on the same ground, and it is less dependent on fossil fuels since artificial fertilizers are not used. Organic production relies to a higher degree on the biological system and contributes to an increased resilience – a more robust ecosystem.”

KRAV will be even more climate smart

KRAV certified products are advantageous to the climate in many ways, but everyone has to do their best if global warming is to be limited to two degrees.

KRAV certified producers are on the right track, but there is certainly room for improvement. Therefore, KRAV, together with six other organisations, has started a project whose purpose is to develop standards for reducing the impact food production has on global warming. By eventually incorporating them into KRAV's standards, consumers can be offered products that take climate into consideration even more and KRAV certified operations can strengthen their competitiveness.

The climate standards tell producers how to reduce their impact on the climate. This involves pinpointing the factors that impact climate throughout the process from the field to the store. Once these factors are identified, it is possible to set regulations and limitations for them.

The standards are adapted to the problems found within the different methods of production. Each type of production has a number of features that impact the environment. Following is a list of some important climate problems and suggestions for dealing with them in the standards.

Farms
General standards for farms focus on measures to improve efficiency and reduce energy consumption as well as requirements for transition to the use of renewable energy sources.

Plant production
One of the greatest sources of emissions from plant cultivation is the release of nitrogen during the storage and dispersal of manure. The standards for plant cultivation thus focus on measures to reduce emissions of nitrous oxide, a powerful greenhouse gas. Farmers quickly ploughing in the manure spread on fields is one example of how nitrous oxide emissions can be reduced.

Livestock Production
The greatest sources of emissions from milk production occur during fodder production and when the animals ruminate. The standards focus on using fodder produced with low emissions of greenhouse gases. Healthy animals are climate-efficient and there are thus requirements for regular health checkups.

Greenhouses
The greatest sources of emissions from greenhouse production are related to energy consumption for heating during the winter, as well as the use of electricity for lighting, cooling and carbon-dioxide production. Thus, standards call for energy efficiency and transition to the use of renewable energy sources.

Sustainable Fisheries
The greatest source of emissions from fishing is from fuel consumption. Choice of equipment is also significant. Trawling uses a lot of fuel, but it may sometimes be justified. Longline and cage fishing are often much more fuel-efficient. In order to avoid unnecessary fuel consumption, a limit will be set for fuel used per kilo of landed fish.

Transportation
The impact of transportation on climate is not always a large portion of the total impact on climate from food production, but in some cases it is easy to change. Within the transportation sector, the use of fossil fuels is the greatest source of greenhouse gas emissions. The standards therefore focus on more efficient use of fuels as well as a transition to renewable fuels. Fuel consumption can be reduced from between five and 20% by driving economically. Therefore, training in environmentally aware driving will be required.

The development of standards to reduce the impact of food production on climate is a long-term effort. Follow development of the climate project at *www.klimatmarkningen.se/in-english/*.

Four Simple Tips for Climate Friendly Eating

Production of the food we eat accounts for a large part of emissions that impact climate. Fortunately, is not difficult to be climate friendly with food. Here are four simple suggestions:

1. *Finish your food! About 1/5 of all food produced is thrown away. If everyone took the right amount and the right amount was prepared, 20% of the emissions from food that impact climate could be avoided.*

2. *Eat according to season! Eat food that is in season. Crisp vegetables and delicate fruit are summer foods. Choosing root vegetables and other storable vegetables (e.g. cabbage) in the winter significantly reduces transportation's climate impact.*

3. *Eat more vegetarian meals! The impact on climate from the production of meat is high, especially for beef. At the same time, cows are needed for grazing and milk production. Consider meat as a luxury item to be eaten on weekends. Learn to make good food with beans.*

4. *Choose KRAV labeled products! Organic production is more efficient from an energy perspective and contributes in many ways to mitigating the effects of global warming. KRAV is a world leader when it comes to climate adaptation.*

The impact on climate from the production of meat is high. Vegetable products have a much lower impact on climate.

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