

How will we sustainably feed nearly 10 billion people by the year 2050?

It is estimated that by 2050, Earth will be crowded with two billion more people. They’re all going to need water, homes, jobs, and medicines. But most importantly, how are they all going to be fed?

This growing population will eat the equivalent of all the food grown in the last 500 years put together.¹ That’s approximately 60-70 percent more than we grow today² or 1 billion tons more cereal³ and 50 percent⁴ more freshwater every year.

This additional food has to be grown on less land and in a way that protects the environment and animals, while also ensuring there’s enough food for generations to come. This is called sustainability, and it can only be achieved by improving its three interconnected elements: economy, society, and the environment.



In the Journey 2050 free educational gaming platform, students farm with real farm families in Kenya, India, and Canada. The decisions they make affect their overall sustainability score.

Did you know?⁶

- Sustainable agriculture is critical in the global effort to eradicate hunger and poverty.
- Hunger is often caused by food waste and inequality of distribution, not scarcity.
- There are an estimated 1.4 billion⁷ people living in extreme poverty and about 870 million people that are hungry, malnourished and food insecure (have difficulty acquiring food).
- Unfortunately, about one-third⁸ of our current global food supply is wasted. In developed countries food is thrown out and over consumed, and in developing countries food is lost to unreliable storage and transportation.

Vocabulary

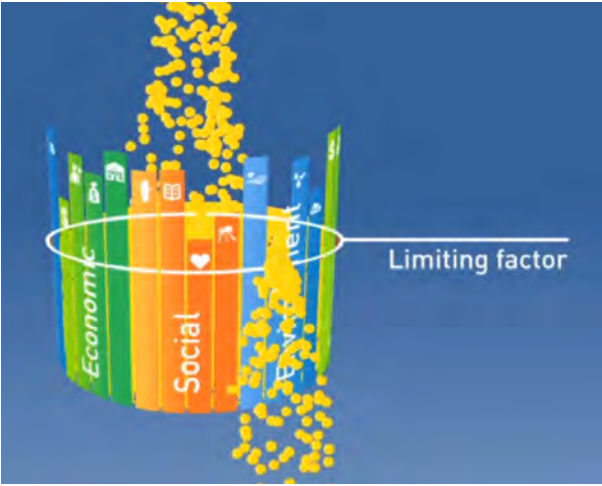
sustainable: meeting the economic, social and environmental needs of the present without compromising the needs of the future

sustainable agriculture: using best farming practices to grow the most food and fiber on the land for long term economic, social and environmental success

The ripple effect of sustainability

The economic component of sustainability is about earning money—creating jobs and incomes to support the national and local community. The social element encompasses things like food, education, medical care and infrastructure, including the roads used to transport food from the farm to your plate. And finally, there are environmental needs to consider. Soil quality needs to be maintained, habitats need protection, water must be conserved, and we need to protect our atmosphere by keeping greenhouse gas emissions to a minimum.

Imagine a barrel with parts made equally from the three elements of sustainability.



This is the sustainability barrel. A community is only as successful as the least developed factor.

You can only fill this barrel to the level of its lowest piece. If the environment is the lowest piece of the barrel, it limits sustainability. This element must be improved to make the world’s sustainability better.

The planting of a single seed creates a ripple effect that helps the farmer’s family, their community, their country and ultimately, the world. The more farmers grow and sell, the more they have to spend on seeds, machinery and fertilizer to produce even more food and fiber. Income that’s spent locally is invested in the community, providing education, medical care and infrastructure and protecting the environment. If farmers around the world start a ripple, it could improve global economies and help billions rise from poverty. Different farmers raise different crops and animals according to their local soil, climate, technology and markets. But they all have one thing in common. They love agriculture.

Journey 2050 and Farmers 2050 games

Journey 2050 and Farmers 2050 are both free, educational, gaming platforms. Both programs address the question of how are we going to sustainably feed nearly 10 billion people in the world by 2050.

The Journey 2050 game is available in the iOS, Android, and Windows Stores; however, it wasn't intended for public use. It has timers to make sure everyone starts and stops roughly at the same time. Also, it has few

commodities simply because there isn't enough time in the program to incorporate everything in agriculture.

Farmers 2050 is the home edition. Farmers 2050 is free to play and there are no advertisements or in-app purchases. It is available on iOS and Android devices.


In the Farmers 2050 animated farming game, droughts occur, mortgage payments come due,

and farm chores never stop. Players discover what it really takes to feed the world. Players have one farm, instead of three, to grow crops, raise animals, and craft goods to sell in the local community. As you play, you must still manage the three pillars of sustainability - environment, economic, and social. Along the way, real farmers from across the world show students what they are doing on their farms.


Features of Journey 2050

- FREE education program on world food sustainability.
- Developed with teachers and industry experts to complement grade 7-12 curriculum.
- Complete in 7 hours and everything is provided: lesson plans, PowerPoint presentations, videos, and game and project activities for each of the seven levels.
- Students experience the lives of farm families in different countries.
- As students play the games, they make decisions and see the impact on society, the environment and the economy at a local and global scale.
- Journey 2050 was written for teachers, no matter their background, agriculture or not, anywhere in the world.
- Lessons focus on the 5E model: Engage, Explore, Explain, Elaborate, Evaluate.

Download for free at:



JOURNEY2050.COM



Journey 2050 School Edition

Top 10 things to do in Farmers

1. Customize your farm.
2. Grow crops applying nutrients and water – watch out for pests, diseases and bad weather.
3. Harvest crops – don't miss the chance to upgrade your equipment.
4. Raise livestock like dairy cows, honey bees and laying hens.
5. Hire workers to help you with chores and to ensure your farm is sustainable.
6. Turn your crops and animals into different products.
7. Trade goods with farmers in other countries.
8. Protect your environment and give back to your community.
9. Make or join a team and compete in Global Events tied to real-life challenges.
10. Watch videos to see what's happening on farms around the world.

Download for free at:



FARMERS2050.COM



Farmers 2050 Home Edition

What does a Colorado Kids Reporter think of these two gaming platforms?



Journey 2050 and Farmers 2050 are two unique games. Journey 2050 is a way for kids to go through something step-by-step looking at the economy, investments, natural reservations, etc (this game is more often used in classrooms). Farmers 2050 is more of a normal mobile farm game, but will not let you level up unless you watch videos and read information about issues such as water conservation.

Teaching kids about issues that are affecting food production is extremely important. If the

new generation grows up not knowing about the new problems making it more difficult to grow food, they may not be able to feed the growing population.

Journey 2050 is a game that takes the player step-by-step through different farms in three locations. In each of these locations, there are different things that one can invest in and there are several challenges that they have to face. Teachers can keep track of what their students are doing in the game by making a teacher code and having their students start the game with it.

I personally enjoyed this game more than Farmers 2050. This game focuses more on education and teaching people about the things that future farmers will have to deal with.

Farmers 2050 is more of a normal mobile game. Like many other farm games, you have to complete quests, plant seeds, and sell items in the market. This game uses advanced language compared to the game Journey 2050, so I would advise it to those 13 and up. I'm 12 and didn't understand a few of the words that they used. Overall a great game that people can use to learn and have fun at the same time.

These two 2050 games are perfect for educational purposes and recreational purposes. Everybody should try them out and learn about feeding the people.

- Chloe Whiteside, 12, a CK Reporter from Broomfield

Plant health and nutrient stewardship

Nutrients are essential. We need them to produce food. They provide energy and support the growth and maintenance of our bodies. Without adequate nutrients, people become malnourished and cannot protect themselves from disease.

We get our nutrients from plants and animals through the food we eat. Animals get their nutrients from the plants they eat, and plants take nutrients from the soil and elements from the air.

Plants require 17 essential nutrients. The primary nutrients are nitrogen (N), phosphorus (P) and potassium (K). Each nutrient does many things for the plant.

Best management practices are developed from science and experience. They're used to prevent soil depletion, improve production on current land, and make sure farmers aren't forced to move onto new, fertile land elsewhere. Thus, more natural habitat is preserved. These practices range from the simple planting of shelter belts or hedge trees for the prevention of soil erosion to more technical practices like the use of global positioning systems for the precise application of nutrients. Best management practices differ depending on the unique characteristics of each farm, but each practice allows farmers to do more with



Journey 2050 and Farmers 2050 teach students the 4R Nutrient Stewardship System. The 4Rs represent the best known method of applying nutrients to crops. Regardless of the type of nutrient used, these practices must be followed for ideal crop yields, environmental protection, and economic returns.

less. The 4R Nutrient Stewardship System is an example of one best management practice that farmers use.

Careers for 2050 and beyond!

Over 1.3 billion people are employed in agriculture throughout the world, generating income for communities and economies as well as providing food, fiber and fuel for a growing world.⁸ The agricultural industry varies widely from country to country. In North America, farmers and ranchers represent two percent of the population.⁹ Technological and scientific advancements have increased the efficiency of food production in developed countries, meaning fewer workers are required to grow food and raise livestock. In contrast, developing countries employ up to 50 percent of the population in farming. Very poor nations employ even more.

The story of agriculture is bigger than just farming. There's a vast network of interconnected jobs, people and industries working together to make agriculture successful. Each of these jobs is integral to building a sustainable world. For every farmer who grows crops and raises livestock there are numerous others working in careers connected to the production of food and fiber that sustain our world. The expansive web of agricultural jobs includes careers related to sales and services, engineering, mechanics, communications,

marketing, economics, education, agronomy, soil science, animal science, government relations, food science, food processing and packaging, transportation and more.

Lesson 6 of Journey 2050 explores the careers in agriculture. Students create a fun avatar and learn about the variety of careers related to agriculture.



Have you ever considered the many diverse careers involved in getting food to your tables? Take cheese for example, look at all the careers that played a role in producing this food. There are many careers that play a hand in providing our food supply. Some careers work directly on the farm, but many other agriculture related jobs do not.

Attention Teachers: Sign-up for the Colorado Literacy Project

Farmers and ranchers visit classrooms and read a book about agriculture! This is a FREE program.

The Colorado Literacy Project is a way to bring agriculture into the classroom while reinforcing reading and science standards. During the spring, farmers and ranchers across Colorado will visit classrooms and read a book to the students. They answer questions, talk about their connection to agriculture, and do an activity with students. At the end of the visit, the book is donated to the school.

A new book on a different agriculture topic is selected each year. The book for this year is *The Girl Who Thought in Pictures: The Story of Dr. Temple Grandin*. This program is appropriate for students in preK through fourth grades. Teacher guides and volunteer



guides are provided for the different grade levels.

Visits will take place from February to May. The sooner you sign up the better. Farmers and ranchers, who volunteer their time and talents, will be matched up with schools for the visits. Sign up one classroom, one grade level, or the entire school. It's preferred to have one contact per school when signing up multiple classes. Visits to multiple classrooms per school can take place on the same day.

Teachers and volunteers may sign-up for this program by using the forms on our website: <http://bit.ly/2YCLvWK>.

Sources:

- 1 <http://www.economist.com/node/18200702>
- 2 Sustainable Development Network Solutions (2013). Solutions for Sustainable Agriculture and Food Systems (page 3) <http://unsdsn.org/resources/publications/solutions-for-sustainable-agriculture-and-food-systems/>
- 3 <http://www.fao.org/mwg-internal/de5fs23hu73ds/progress?id=HXecPI0p3XpJtFbAsjLRZd3G4ZjPgUW5N3PqtZYwwio>
- 4 <http://waterfortheworld.net/index.php?id=12>
- 5 <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>
- 6 Sustainable Development Network Solutions (2013). Solutions for Sustainable Agriculture and Food Systems <http://unsdsn.org/mwg-internal/de5fs23hu73ds/progress?id=EHV3NQH3C4-PP-EivDwXY4i2HzlJlWty8lBnkNioco0>,
- 7 <http://www.un.org/en/globalissues/briefingpapers/population/vitalstats.shtml>
- 8 http://www.momagri.org/UK/agriculture-s-key-figures/With-close-to-40-%25-of-the-global-workforce-agriculture-is-the-world-s-largest-provider-of-jobs-_1066.html
- 9 <http://www.fb.org/newsroom/fast-facts>

Colorado Foundation for Agriculture

This issue of *Colorado Kids* was produced by the Colorado Foundation for Agriculture in cooperation with the *Denver Post Educational Services*. The Colorado Foundation for Agriculture is a 501(c)3 nonprofit education corporation that works with community stakeholders to help meet our shared vision of advancing agricultural literacy. Our mission is connecting Colorado educators and students to their food, fiber, fuel, and natural resources.

The Colorado Foundation for Agriculture thanks all of our sponsors and supporters. When you donate to the Colorado Foundation for Agriculture, you help make the next generation agriculturally literate. To learn more or to make a tax deductible donation, visit www.GrowingYourFuture.com.

Subscribe free to the Colorado Reader

The *Colorado Reader* is an eight-page student activity newspaper available FREE to Colorado educators, thanks to our sponsors. The reading level is geared towards 4th through 6th grade students, however educators across all levels have found the *Readers* a valuable asset in their classrooms. The *Readers* are sent in classroom sets of 30 copies and accompanied with an educator's guide.

The *Colorado Reader* reinforces standards for reading, writing, and communicating, science, math, social studies, and more! Planned topics for this school year include: Colorado produce; What are cooperatives?; renewable energy; soil, water, and air stewardship; Colorado beef and nutrition; and corn: food, feed, and fuel.



To learn more about the *Colorado Reader* or to sign up your classroom for a free subscription for the 2019-2020 school year, visit: <http://bit.ly/2XyjG4M>

Free lesson plans on the Curriculum Matrix

The National Agricultural Literacy Curriculum Matrix is an online, searchable, standards-based database of classroom ready lesson plans and resources for K-12 educators. The Matrix contextualizes national education standards in science, social studies, and nutrition education with relevant instructional resources linked to Common Core Standards. Start searching the Matrix now at: <http://bit.ly/2Ebc0l5> or visit www.GrowingYourFuture.com.

ColoradoKids

is produced by
Denver Post Educational Services
Executive Editor: Dana Plewka
dplewka@denverpost.com
CK Editor: Mike Peterson
coloradokidseditor@gmail.com
We welcome your comments.

For tools to extend the learning in this feature,
look under "Youth Content" at:
www.ColoradoNIE.com

eEditions of the Post are
free of charge for classroom use.
Contact us for information on all
our programs.

Denver Post Educational Services
5990 Washington St.
Denver CO 80216
(303) 954-3974
(800) 336-7678

