

The Arctic Seed Vault

A Reading A-Z Level T Leveled Book
Word Count: 1,129

Connections

Writing

Why should people protect the world's seeds? Create a slogan that shows the importance of this task.

Science and Art

Research which countries have seed banks. Choose one of those countries and create a poster with information about its seed bank.

LEVELED BOOK • T

The Arctic Seed Vault

**Reading A-Z**

Visit www.readinga-z.com
for thousands of books and materials.

Written by Kira Freed

www.readinga-z.com

The Arctic Seed Vault



Written by Kira Freed

www.readinga-z.com

Focus Question

What is the Svalbard Global Seed Vault, and why was it created?

Words to Know

crisis	fortress
duplicates	insurance
extinction	preserve
facility	vault
food security	

Cover: The entrance to the seed vault looks beautiful in the Arctic landscape.

Title page: A vault worker catalogs newly arrived seed samples.

Page 3: The entrance tunnel to the vault looks strange and mysterious.

Photo Credits:

Front cover, back cover: imageBROKER/Alamy Stock Photo; title page: © Pal Hermansen/NPL/Minden Pictures; pages 3, 6 (inset): CPC Collection/Alamy Stock Photo; page 4: © Kerstin Langenberger/imageBROKER/imageBROKER RF/age fotostock; page 6 (main): © SOPHIE RAMIS, PAUL DEFOSSEUX, JONATHAN STOREY AFP/Newscom; pages 7, 15: JIM RICHARDSON/National Geographic Image Collection; page 8: Hemis/Alamy Stock Photo; page 9: © Yonhap News/YNA/Newscom; page 10: © Larsen, Haakon Mosvold/AFP/Getty Images; page 11: RALPH LEE HOPKINS/National Geographic Image Collection; page 12: © Nigel Cattlin/Science Source; page 13: © iStock.com/xavierarnau

The Arctic Seed Vault
Level T Leveled Book
© Learning A-Z
Written by Kira Freed

All rights reserved.

www.readinga-z.com

Correlation

LEVEL T

Fountas & Pinnell	P
Reading Recovery	38
DRA	38



The seed vault is protected by its remote location on an island in the Arctic Ocean.

Table of Contents

Food Crops in Danger!	4
Inside the Arctic Circle	5
Purpose	8
How It Works	10
Seeds in Danger?	14
Glossary	16

Food Crops in Danger!

Earth's population is growing quickly. Wars, disease, and natural disasters are happening around the world. Concern is growing that a **crisis** could wipe out important food crops. Scientists are collecting seeds in a **fortress** near the North Pole in case of an emergency. They're working to **preserve** plant species to make sure the planet's food supply stays safe. The fortress, which is called the Svalbard Global Seed **Vault**, is the world's largest **facility** for seed storage.

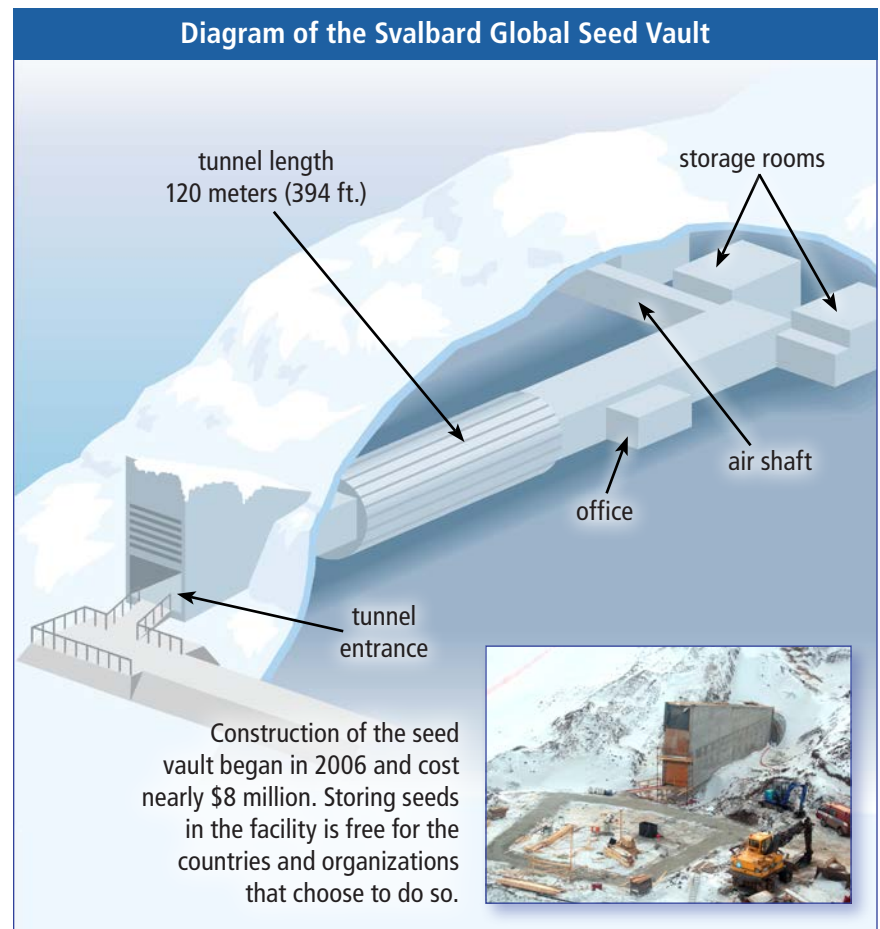


The Svalbard Global Seed Vault is located about 1,000 kilometers (621 mi.) from the North Pole.

Inside the Arctic Circle

The Svalbard Global Seed Vault was named for its location in a group of islands in the Arctic Ocean that belong to Norway. Builders blasted into a mountain on one of the islands and carved the vault into the rock. The seeds are stored more than 120 meters (394 ft.) inside the mountain. They are housed under rock that is at least 40 meters (131 ft.) thick.

The idea for the seed vault began in the 1980s. In 1984, a company set up a facility for storing seeds in an old coal mine. Scientists decided it wasn't safe enough and said a new facility should be built nearby.



Construction of the seed vault began in 2006 and cost nearly \$8 million. Storing seeds in the facility is free for the countries and organizations that choose to do so.

The people who planned the seed vault chose its location for many reasons. It's far from big cities, yet people can reach it on regular airplane flights. Earthquakes and other natural disasters are not a concern. Also, the location is 130 meters (427 ft.) above sea level. That's good protection against flooding, even if sea levels rise because of climate change.

Perhaps the best reason for the location is a layer of permafrost—ground that is always frozen. Permafrost helps keep the seeds cold naturally, which saves energy and money. Permafrost cools the vault to several degrees below freezing. Refrigeration units cool the vault even more, lowering the temperature to -18°C (0°F). The seed vault also has generators that could keep the refrigeration running if the power went out. Even if all power failed, however, permafrost alone would keep the seeds cold enough.



Concrete and plastic fiber on the seed vault's walls make them look like snow and ice. The real walls are dark-colored rock.



Roland von Bothmer, a scientific advisor, shows the vacuum-sealed aluminum foil bags and glass vials used to store seeds in the vault.

Purpose

The purpose of the seed vault is to safely store **duplicates** of seeds that are kept in other places around the world. The goal is to preserve the world's food plants and protect them from accidentally being destroyed. Like carrying an extra house key, the seed vault is extra **insurance** against something bad happening to seeds stored elsewhere.

Seed banks in countries around the world can be in danger for many reasons. War or severe storms can destroy a country's seed bank. Flooding and fire can destroy precious seeds as well.

In addition to these big threats, poor management and a lack of money can also put seed banks around the world in danger. Even something as simple as a freezer not working right could cause an entire seed collection to be lost. If that happened, a type of food plant could be lost forever. The **extinction** of any form of life is a great loss to all of Earth. The Svalbard seed vault was built to prevent that loss.



South Korea's National Agrobiodiversity Center serves as another world seed vault.



Wangari Maathai of Kenya and Jens Stoltenberg of Norway placed the first seeds in the vault when it opened in 2008.

How It Works

The seed vault opened on February 26, 2008. It stores seeds from around the world. Each of its three halls can hold about one and a half million seed samples. Only one hall is being used now. As of February 2018, more than one million seed samples were stored there.

Word Wise

A *sample* is a small amount of something that is a good example of the whole thing. Each sample at the seed vault is made up of about five hundred seeds.



Seeds from the Philippines are packaged before being sent to the seed vault.

Seeds from many different countries arrive at the vault in special packages made of heavy foil. The packages are then placed in boxes.

No one is allowed to open boxes or remove seeds except for people from the country that put each box there. The vault has security cameras, sensors, and locked doors. Strict rules control who can enter. According to the website of Crop Trust, one of two organizations that manage the seed vault, “Unofficial security is provided by polar bears, which prowl the mountain outside.”

It’s not only important to store the seeds of different plants, such as rice and wheat. It’s also important to store seeds of different kinds of rice and wheat. Certain kinds may be less affected than others by a disease or other threat. Preserving many different kinds of seeds creates more possibilities for the future. No one knows what Earth will be like one hundred years from now. However, the more kinds of seeds people have, the better their chances of having enough food.

Helpful Seeds

The Svalbard Global Seed Vault holds the seeds of a kind of wild rice that is not harmed by an insect known as the brown planthopper. This insect destroys rice crops in Sri Lanka, an island near India. Scientists are using the same kind of seeds to create a new kind of rice that farmers in Sri Lanka can grow.

Other seeds in the vault are from special kinds of beans and maize (corn) that are high in certain nutrients. The beans can help people whose health suffers because of a shortage of those nutrients.



Planthoppers eat rice plants and also transmit deadly viruses to the plants.

Foods Around the World

Many factors play a part in people having a secure supply of food. One of them is being able to eat foods that are part of their everyday lives. People around the world grow and eat different kinds of foods. For example, many people in Asian countries eat rice, and corn is an important crop in North, Central, and South America. When people have a secure food supply, they can keep eating the kinds of foods they prefer.



A family enjoys choosing fruits at a local farmer's market.

In addition to having enough food, people need food that's safe, nutritious, and affordable. The food must also be of good enough quality to keep people healthy. All these things are part of a big idea called **food security**. The goal of the seed vault is to guarantee that, in the future, people will have a supply of food they can count on.

Seeds in Danger?

The vault's builders thought the seeds stored there would always be safe. They thought the permafrost would be there forever. However, a recent event caused some concern. In October 2016, Svalbard had unusually warm weather, which caused some permafrost to melt. It also caused heavy rain to fall instead of snow. As a result of these events, some water collected at the vault's entrance.

Earth is warming up. Svalbard's warmer weather raised questions about how global warming will affect the vault in the future. People started to wonder whether permafrost could be counted on to keep the seeds safe.

Global Warming

Global warming is a rise in the average temperature of Earth's air and oceans large enough to change long-term weather patterns. Global warming today is mainly caused by human activities. These include clearing land for farming and burning coal, oil, and gas. These things make large amounts of carbon dioxide gas. This gas enters the air around Earth and traps heat close to Earth's surface. Global warming is causing many problems, including more bad weather and dangers to plant and animal communities. Scientists expect the problems to get worse unless we cut way back on the activities that make so much carbon dioxide.



A scientist holds two vials of peas at the Svalbard Global Seed Vault.

The seeds were never in danger in 2016. The water only reached one-sixth of the way into the vault's main tunnel. If the water had reached the other end, water pumps would have removed it. Still, the government of Norway decided to make improvements to keep the seeds even safer. People now watch over the vault twenty-four hours a day. Workers are making the tunnel waterproof.

There's no way to know how much warmer Earth will get or how the seed vault will be affected. No matter what happens, people will keep working to save the seeds. "The Seed Vault offers long-term protection for one of the most important natural resources on earth," notes Crop Trust's website. "It is the final backup."

Glossary

crisis (<i>n.</i>)	a dangerous or unstable time or situation that demands attention (p. 4)
duplicates (<i>n.</i>)	exact copies of something (p. 8)
extinction (<i>n.</i>)	the process by which an entire group of animals or plants dies out (p. 9)
facility (<i>n.</i>)	an area, building, or structure that is devoted to a specific purpose or task (p. 4)
food security (<i>n.</i>)	the state of being able to find and afford healthy and safe food in the amount needed to maintain health (p. 13)
fortress (<i>n.</i>)	a building or group of buildings built to protect from attack or destruction (p. 4)
insurance (<i>n.</i>)	something that gives protection against something bad or unexpected happening in the future (p. 8)
preserve (<i>v.</i>)	to take care of and save for the future (p. 4)
vault (<i>n.</i>)	a place used to safely store important things (p. 4)