

POTATO, MAN'S BEST FRIEND... FOR 8,000 YEARS!

A staple of the high Andes, potato was grown in rotation with indigenous quinoa and kañihua

By Dr. Horia Groza, University of Wisconsin, retired

Potato and man coexisted more than 12,500 years ago, but they became friends only 8,000 years past, when domesticated. Potato fed man and man protected potato from dying of diseases.

Monte Verde is a site near Puerto Montt, in Southern Chile, where the young archeologist Thomas Dillhay (*The Settlement of America, A New Prehistory*, Basic Books, 2000) proved that people dug, gathered and consumed potatoes 125 centuries ago.

It was a time when the glaciers retreated, and the climate started to be warmer and drier.

Twenty-four root and tuber plants resisted the long, dry seasons in the Andean mountains at an elevation of 13,000 feet because their starch reserves were stored underground.

Among them, potato was the only

one that did not shrivel in time (John Reader, *Potato, a History of the Propitious Esculent*, Yale University Press, 2008).

The tubers were bitter, up to twenty-fold richer in glycoalkaloids than they are today.

Aymara inhabitants of the Bolivian Andes imitated the geophagy procedure of parrots and monkeys, mixing potato as food with a little clay, which absorbed the glycoalkaloids and was eliminated undigested.

Later, man noticed that a process of freezing, washing, refreezing, drying and rubbing might remove the potato's poisonous bitterness. Consequently, he made chuño, a white or brown, dry, small potato of hard consistence, storable for decades.

The man's genuine friendship with



Dr. Horia Groza, shown here in a potato field, worked at the Rhinelander Agricultural Research Station, Wisconsin, for nine years. In all, he spent 40 years researching potatoes.

potato started about 8,000 years ago in the Peruvian and Bolivian regions bordering Lake Titicaca, when a persistent selection led to a more consistent crop with larger and less bitter tubers.

MODERN POTATO

By sequencing DNA, researcher David Spooner tracked modern potato from a group of 20 species in the *Solanum brevicaulis* complex of morphologically similar, wild, cultivated potatoes.

By Inca times, potatoes were well established as the staple food of the high Andes, grown in rotation with the indigenous quinoa and kañihua, on land lengthily fallowed and fertilized by herds of domesticated llama and alpaca.

Potato covered the territory above 8,000 feet elevation and corn in the area below that.

The Inca Empire (1438-1533 A.D.), whose subjects at that time represented 40 percent of the whole

“I would like to add a few more words about this round-oval fruit of earth, this mysterious character who was my companion during my entire life and to whom I dedicated my whole professional career.”

– Dr. Horia Groza

population of the two Americas, living on a large territory from Columbia to Chile (John Reader, in the work already cited), reached an outstanding level of strength and civilization.

The civilization included an impressive 25,000 miles of paved roads, an intense irrigation system and numerous well-built terraces.

The main source of wealth could be found in the mercury and silver mines and the haciendas, under wise management based on the rule of mita. Every man had to contribute either with two months labor in mercury mines (in a very toxic environment) or 12 months labor in silver mines.

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Although potato and man coexisted more than 12,500 years ago, they became friends only 8,000 years past, when domesticated. Potato fed man and man protected potato from dying of diseases.

A third option was several years of work in haciendas to provide potatoes to the miners. This was organized in such a way that one-seventh of the population took turns at a given time.

The Inca worshipped the sun. With an outstanding science of stonemasonry, they built, in Corincancha, a great sun temple with golden corn cobs on silver stalks and with lumps of golden potatoes.

SIR FRANCIS DRAKE

Arguably, Francis Drake, in 1580, was the first person who brought the potato to Europe. In Offenburg, Germany, one can admire his statue with a potato plant in his hand.

The legend says that Walter Raleigh offered a plate of boiled potatoes to Queen Elizabeth I, who knighted him in turn. The botanists Gaspard Bauhin (1596) and John Gerard (1597) described the potato plant. The gardeners, not very convinced yet, started to grow it.

18 BC'T August



An 1859 painting by French artist Jean-François Millet, *The Angelus*, depicts a scene, at dusk when, after digging and bagging potatoes, two peasants hear the far sound of bells from the village and pray.

The young French pharmacist Antoine-Augustin Parmentier was fed potatoes while he was a prisoner in Prussia during the Seven Year War. Upon returning home, he enthusiastically promoted this crop.

Among his guests at dinner, in the late 1700's, were Benjamin Franklin and, reportedly, Thomas Jefferson, who both enjoyed a whole potato menu from soup to liqueur.

Besides being an important source of carbohydrates, vitamin C and potassium, potato has a great protein "biological value" (how much nitrogen is absorbed, retained and used by the human body for growth and maintenance).

According to Reader, its index of 73 is beat only by eggs (96) and is above all the others from soybeans (72) to corn (53).

Redcliffe N. Salaman (*The History and Social Influence of the Potato*, Cambridge, 1985) reported experiments with active people living

perfectly healthy, without any change in weight, for several months on a diet based exclusively on potatoes (with a little margarine).

The rice crop is much more labor-intensive than potato and provides only half of the food amount per acre as that of the latter.

BIGGEST POTATO PRODUCER

In the 1990's, Asia became the biggest producer of potatoes (31 percent of the world production).

China is now in first place for world production (James Lang, *Notes of a Potato Watcher*, Texas A&M University Press, 2001).

Due to a reduced emission of CO₂ and N-oxides, potato fields are more compatible under global warming conditions than cereal and vegetable crops or fruit orchards.

Adam Smith had a good word for potatoes in his *Wealth of Nations* (1776), as did Thomas Malthus.

Just before the Irish Potato Famine

(1845-1852), the Reverend John Graham wrote a short poem: "Oh! There's not in the wide world a race that can beat us, from Canada's cold hills to sultry Japan. While we fatten and feast on the smiling potatoes, of Erin's green valleys so friendly to man."

In 1859, the French artist Jean-François Millet painted *The Angelus*. The painting depicts a scene, at dusk when, after digging and bagging potatoes, two peasants hear the far sound of bells from the village and pray.

Inspired by Charles de Groux's painting *The Blessing Before Supper*, the Dutch master Vincent Van Gogh painted, in 1885, *The Potato Eaters*, depicting a peasant family gathering in an intimate atmosphere at the supper table where the only food is a large plate with steaming potatoes.

In 1913, the American Catholic poet Alfred Joyce Kilmer wrote a poem that rapidly became popular: *Trees*. It was memorized by generations of students. As a song composed by Oscar Rasbach, *Trees* was performed by famous singers Nelson Eddy, Robert Merrill and Paul Robeson, and it was included in movies and TV shows.

Inspired by these works of art and poetry, I wrote the poem *Potato* in 2019:

"Eager to grow to catch the light,
he sprouts impatient in store's night.

Soon he'll cover this land of ours,
praising lord with sea of flowers.

While underneath in room of prayers,
he tells the master his intime cares.

He fills with tubers the soil bed,
as Jesus multiplied the loaves of bread.

The labor's fruit is hid in ground,
as virtue humble and profound.

At dinner baked he opens chest,
as Jesus broke the bread and blessed.

Only God whom all we seek,
could make potato so unique."

I included this poem in the poetry book entitled *The Sign of the North* (Reflection Books, 2020) that I dedicated to my friends and colleagues in Wisconsin, as well to all my present and future other friends.

The fabulous farmer and writer Justin Isherwood, who prefaced the book, wrote, "Taters tend to burrow. They're half Irish and predisposed

to felonious behavior: sneaking, conniving, avoiding daylight" (*Book of Plough*, Lost River Press, Inc., 1996).

I would like to add a few more words about this round-oval fruit of earth, this mysterious character who was my companion during my entire life and to whom I dedicated my whole professional career.

Potato is a special creature. He knows

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philosophy; he knows that we come from dust and we return to dust. He likes to study everything in depth; that is why his vines investigate the sunlight under the blue sky, and their philosophical wonder leads to accomplishments in the depth of the ground.

He is a modest being and not a braggart one; in order to learn his talents, we must dig.

He is wise; he displays with generosity the splendor of a canopy in blossom during the summer, but being aware that everything is transient, he stores carefully his goods in a protected place.

He loves his homeland and remains deeply attached to his mother's soil. Potato is man's best friend. **BCT**

Horia Ion Groza

The Sign of the North
poems

Reflection Books

2020

Wisconsin is the American Dairyland, a country of corn, potato, cranberry, and ginseng. The bluegrass, the tomatoes and the Northern Lights, together with the singular beauty of the nature and its harsh climate, create a unique philosophy in the Wisconsin people. They have a deep understanding of life, a mind of firm certitudes, a warm heart fed by a family of bees in free flight, a special sense of humor, and a solid discipline of hard work. Many poems of this book are inspired by my years spent in Wisconsin and I dedicate it to the great hearts of the people that I was blessed to meet there. They became a luminous part of my life.
Horia Ion Groza

Horia Groza is surprising for a plant breeder who by nature ought to be entirely realistic and uncompromising when the issue is beauty, truth, love of little things, DIFFERENT. Horia is DIFFERENT. True, he loves the potato for it is a good thing to love, but he loves also the tender, the small, the seldom seen. This is a blessed state I shall end there... for the purpose of life of gentles and giants is to arrive at the Blessed State.

Poetry is a potato fork. I have several. With a fork you feel the earth, feel gravity, feel the lifting, feel the worms, feel the soil, feel the sweat, feel the tith. And if you are like Horia and me, feel the godliness of the potato. This book of poems by Horia is not the monastic Lenseo, instead a potato fork. Poetry equipped with a short handle to feel the gravity of our lives, its worms, its tith. A forkful at a time, digging is necessary, and in the lifting, to feel the earth's desire. These words of this potato researcher I'm so honored to know and call friend.

Justin Isherwood, Author of *Book of Plough, Essays on the Fines of Farm, of Family & Rural Life and of Peace, A Farmer's Tale on the Universe.*

Horia came from the East -- you could say from behind the curtain. He brought passion for freedom and justice emboldened by the belief in higher good. Medicine was not an option so the science of agriculture and potato became his vocational pursuit. In our time to know him, Horia chose to invest uniquely in what he could offer, not limited by distance, living almost nine years more than half a continent away from his beloved Joanna, we learned about the culture and faith that supported Horia as he invested knowledge, sweat and practice into our fledgling program of potato breeding. And there were also the weekly afternoon tennis matches with the club! While the potato program continues on to international recognition, more significant is that we became friends and family and brothers in the faith.

Bryan Bowen, Director of Agronomy, Black Gold Farms, former Associate Researcher at University of Madison-Wisconsin and Superintendent of Rhineland Agric. Research Station.

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The author of this article, Dr. Horia Groza, included his poem *Potato* in the poetry book entitled *The Sign of the North* (Reflection Books, 2020). He dedicated the book to his friends and colleagues in Wisconsin, as well to all other present and future friends.

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