

Potash

14 March 2010, mailing n°9-2 Dr Thomas Chaize
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Term *potash* comes from the English: *pot ash*, which means ashes pot. Two centuries ago potash was extracted from wood ash in large iron pots. First potash mine opened in Germany in the mid-19th century, now potash comes mainly from potash mines of Saskatchewan (Canada) and Urals (Belarus and Russia). Do not confuse the potash, ore consisting of sylvite and rich in potassium oxide used as fertilizer after refining with potassium, chemical element symbol K, alkali metal obtained

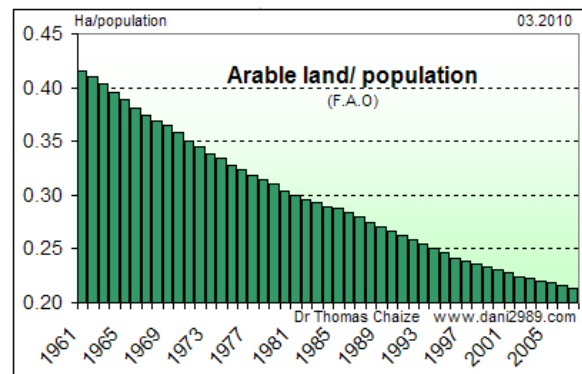
I. Agriculture.

Several trends seem clearly identified for agriculture: Growth of world population: 2.5 billion in 1950, it reached 5.9 billion people in 1998. World population is now estimated at 6.8 billion inhabitants, stabilization is not possible before 9 billion. In parallel, as the area of arable land has been stagnant for 30 years while a continuing decline in agricultural land per capita in the world is inevitable.

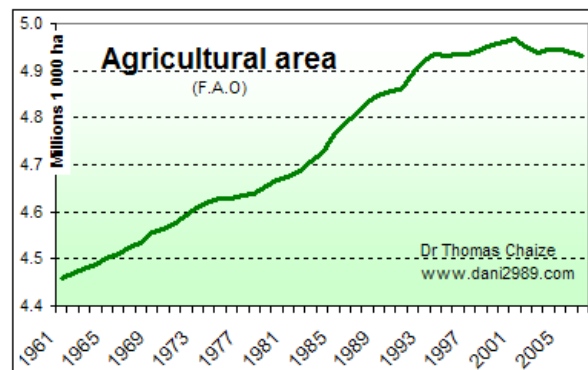
Eating habits changed: developing countries adopt diet rich country that is an enriched protein diet. Beef consumption increases, the beef consumed wheat that causes an increase in fertilizer application. It takes 100 times more water to produce 1 kilogram of beef than a kilogram of wheat, it takes 7 kg of wheat for a kilogram of beef. Meat consumption in China more than doubled from 1989 to 2009, today it is 50 kilograms per capita and in USA 126 kilograms per year!
Agricultural areas are stagnant or even declining as a result of desertification, urbanization, salinization of soil, poor irrigation, erosion and climate change. The farmland is a precious commodity, managed to short-term quantity and quality are threatened. Arable land and

Problem of **water** named *blue gold* : today we grow tomatoes in deserts, rice where there was wheat, mangoes instead of cactus ... These miracles are in agricultural prices waste of precious water reserves. Since 1961, agricultural land equipped with irrigation systems have doubled in the world. Water needs are increasing while reserves have never been threatened by mismanagement, pollution, loss of wetlands, drought (agriculture consumes three-quarters of the water in the world)
Climate change exacerbates drought. Soil salinization, desertification, flooding and erosion are limiting factors for agricultural production

from potash. Potash comes from seawater trapped in the plains, there are millions of years, this water has evaporated, leaving a layer composed of calcium sulfate, sodium chloride (salt), potassium chloride and of magnesium salts. Today, potash deposits are found buried at a depth of 500 to 1 000 meters underground. Potash is used to 95% by agriculture, the rest is used for detergents, soaps and glass.



water are valuable assets too often wasted by a short-term management.



around the world. Floods in Bangladesh, major fires in southern California, droughts in Australia, unmarked, these events have become almost seasonal phenomena.

To summarize, agriculture feed a larger population, which increases power, but whose farmland are declining and worst qualities, subject to water stress and climate more important.

To complicate matters, the [price of oil](#) is a long-term trend significantly upward. Hydrocarbons are necessary to fertilizer nitrogen (N), tractors, pesticides. When the price of oil is above a portion

of agricultural production is no longer used for food but for the production of agrofuels...

These trends are more complex, interconnected and subject to many battles on the causes and consequences. But they seem obvious, observable

II. Fertilizer and potash.

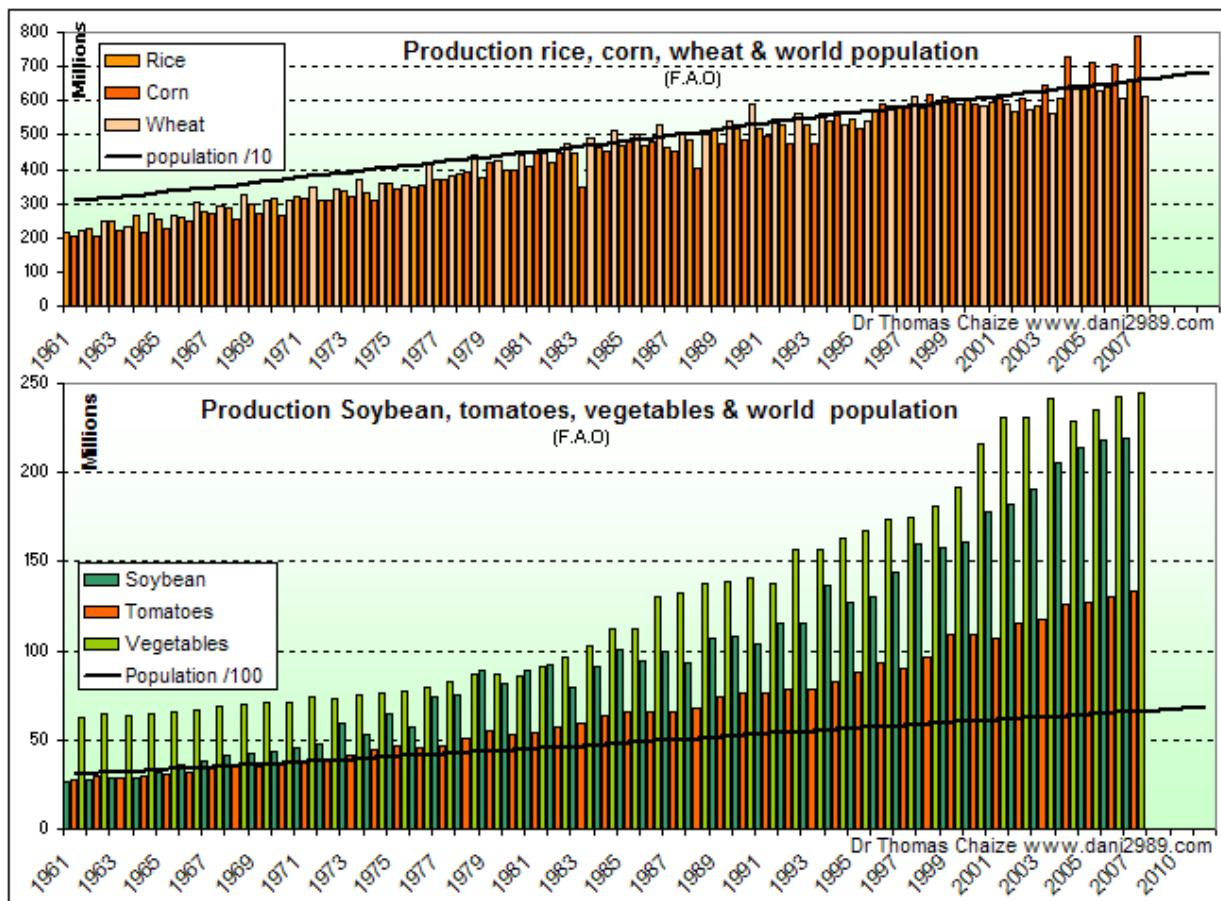
Fertilizers contain three basic elements called NPK: nitrogen (N) for the plant development, phosphorus (P) for resistance and potassium (K) for yield, quality and stress resistance (disease and drought). Potash reduces transpiration of the plant and its water consumption decreases, so the plant is more resistant to drought. You will notice that the properties of the potash plant (larger fruit, and drought resistance) correspond to current problems and future of agriculture (yield, water shortages, disease).

Four major fertilizer consuming countries are China (1.3 billion), USA (agricultural exports), India (1 billion) and Brazil (agricultural exporter). Among the four biggest consumers of fertilizers, there are three emerging countries (Brazil, India and China),

everyday at home and around the world when you travel. Agriculture will have to perform miracles to successfully feed the growing world population without increasing the problems she is herself a victim.

they have a very strong growth and agricultural demand is growing.

Potash is used primarily in the cultivation of fruits and vegetables (17%), maize (15%), wheat (15%), rice (14%), sugar (4%), cotton (4%), soybeans (4%) and palm oil (2%). Since 1961, world population has doubled in the same time the production of wheat and rice has tripled the production of vegetables and maize has quadrupled, tomato production has increased fivefold and soybean production has increased eightfold. Crop production using potassium (vegetables, wheat, rice, cereals, soy ...) grew faster than population growth from 1961 to today. This trend will probably continue in the coming years with continued growth in world population and changing dietary habits.



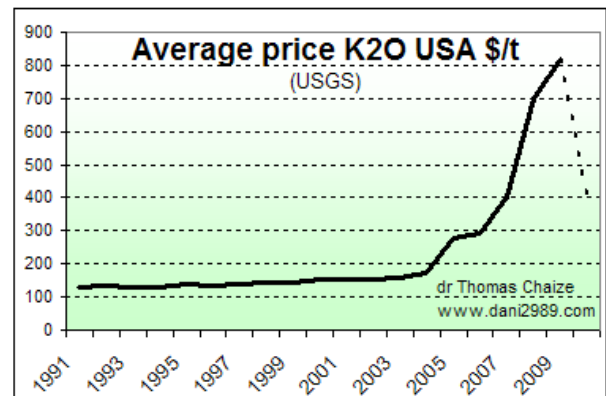
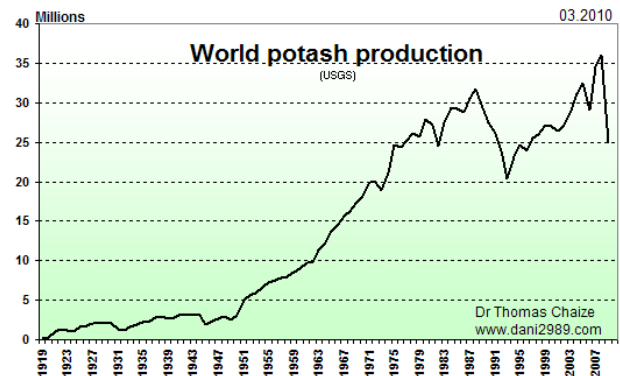
III. Production and price of potash.

Since the first discovery of potash in Canada (1943) and the Soviet Union (1949), Canada dominates world production of potash. 95% of its production comes from the province of Saskatchewan and 5% of New Brunswick. In 2009, global production of potash declined by almost one third, it increased from 35 to 25 million tonnes, reasons are increasing prices and the crisis. The same year, Canada has produced 6 500 tonnes of potash, No. 2 Belarus with 3850 tonnes of potash, No. 3 Russia with 3 600 tonnes of potash, No. 4 China with 2750 tons of potash, No. 5 Germany with 2 300 tonnes of potash and No. 6 Israel with 2 000 tonnes of potash. 85% of world production of potash comes from these 6 countries, 55% of production and 75% of reserves from two regions: the Saskatchewan and the Urals. Fertilizer demand is almost universal, but its production is limited to a handful of countries. The major fertilizer consuming countries (China, USA, India and Brazil) depend for their agricultural production of a limited number of countries. China (rice, wheat), fourth largest producer of potash, has significant problems of arable land and water, it covers only ¼

Potash does not trade continuously like [oil](#) or [gold](#), price is result of direct negotiations between consumers and producers. Price of potash has increased considerably in recent years, reflecting the increased demand and supply "inelastic" production of potash. This is the result of the limited number of producers (seven potash producers ¾ of total world production of potash) and considerable investment required to open a new potash mine. For example, Canada, the world's largest producer of potash, was totalling only 11 mines in operation run by three mining companies.

Price of potash has stagnated in a price canal between 130 and 160 dollars from 1991 to 2003 dollars, then price of potash rose to more than \$ 1 000 in 2008 before falling to \$ 350 during the crisis. Today, price of potash is the result of a standoff between consumers (China & India) and producers (Canada & Russia). It is even difficult to give an award for being the current situation is so tense between producers and consumers. It is possible to estimate a range of 350 to 400 dollars at the sight of certain contracts signed recently. China

of its needs with its production of potash. The U.S. (corn, soybeans, wheat), Brazil (soybeans, corn, sugar cane) imports 90% of the potassium they eat and India (rice, wheat) imports 100% of the potash it uses to feed its billion people. Potash is not scarce, resources are very important, but they are concentrated in a few privileged places of the globe, primarily in Canada, Russia and Belarus, countries are producing ten times more rare than the consumer countries.



has signed a contract with a producer in Belarus at \$ 350 per ton of potash, and India with Canadian producers \$ 370 per ton of potash, but are only short-term contracts. With higher prices, they have more than quadrupled in 4 years, and the crisis, farmers have used less of pot. Thus, plants have tapped into the existing land reserves of potassium, depletion, consumption should pick up to avoid a sharp fall in crop yields. You can not make potassium intake for 1 or 2 years beyond the yields decrease rapidly.

It seems clear to the sight of fundamentals (population increase, change of use, loss of agricultural land, water problems and climate change), but also in the interest of major mining groups, the concern of the China, India and Brazil that produce potash will increase long-term (there is no known substitute for potash). Rate of growth of potash production will determine the level of price per ton of potash, as excess capacity of potash production decreased each year with increased demand.

Entrance fee to join the exclusive club of potash producers is 1 to 3 billion dollars to build a potash mine after purchasing one of the few existing junior. At this price, production of potash is an area where contenders can be counted on the fingers of one hand...

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