POTASH: THE FUEL FOR FOOD

Essentially, potash is food.

Without potash, there is no grain and without grain, there is no beef, pork or chicken to support the

world's growing demand.

THE GHOST OF THOMAS MALTHUS

In 1798, a 32 year-old British economist, Thomas Malthus, anonymously published a rather grim work called "An Essay on the Principle of Population" and in it he argued that while human population increases geometrically (1, 2, 4, 16 etc.), their food supply can only increase arithmetically (1, 2, 3, 4 etc.). Since food is obviously necessary for us all to survive, Malthus felt that unchecked population growth in any one area or involving the whole planet would lead to individual pockets of humanity starving or even mass worldwide starvation.

According to the U.S. Census Bureau, as of July 1, 2011, world population is estimated to be 6.94 billion. Current projections show a continued increase in population numbers and by 2050, the world's population will be hovering around nine billion.

Providing food for so many is a demanding task that involves many significant issues and challenges. Even today, too many people are hungry and in some parts of the world are starving. Unfortunately, there is not just one, single easy answer.

The U.N. is calling the looming global food crisis a "silent tsunami" and faith in the ability of local and global commodity markets to fill the 6.6 billion bellies we currently have, never mind the projected 2.7 billion more by 2050, is a world-wide concern that is growing in both attention and the aggressive search for solutions.

GETTING ENOUGH FOOD

Going forward there are circumstances that are going to greatly impact the availability of arable land and commodities demand. One of the greatest threats facing us is the loss of arable land that was once used for food production. Land is being used for other purposes, topsoil is eroded away by wind and water, and the agriculture land base is being paved over as we become more and more urbanized.

Along with the growing population is also the growing desire to adopt a "western style" diet. The more people there are on this planet and the more people that decide they want a western style diet the more grains/oilseeds are needed to feed them. And many of those very same grains are needed to raise the protein – the beef, pork and chicken – they want. It takes two pounds of grain to make a pound of poultry, four pounds to make a pound of pork and seven to make a pound of beef.

The reality is that farming practices are going to have to improve and every possible acre that can be planted is going to have to be utilized and producing at its optimal level. Because we have to grow more food on a shrinking agricultural land base, while using often depleting supplies of fresh water, the question becomes: how do farmers grow enough for everyone? This is obviously an overwhelming task — and one that could still use considerable improvement. No one should ever go hungry or starve for lack of food.

However, when people do get fed well it is because of a humble fertilizer you've probably never given a thought to: potash.

Potash plays a central role in helping feed the world's growing population.

POTASH 101

Potash is a fertilizer that is made from potassium (K). Potash got its name in Europe where there was a long

tradition of burning wood or seaweed and leaching the ashes in water. Then the solution was evaporated in large iron pots. What was left was a hard, white residue called “pot ash.”

In the ground, potash ore looks like a mixture of red and white crystals with traces of clay and other impurities. It is a soft, crumbly mineral, and it has a silvery look when freshly exposed. After processing, it is white in its pure form. Some impurities will give it a pink color.

The mineral’s name refers to several forms of potassium salt, the most important being potassium chloride or KCL. It is one of the world’s three important fertilizers. Used in combination with nitrogen and phosphate, potash increases the yields of such important crops as corn, soybeans, coffee, and rice.

Potassium is, in its various compounds, very abundant throughout the Earth’s crust – it is the seventh most abundant element in the crust. Yet, paradoxically and unfortunately, deposits of potassium compounds – potash – which can be economically claimed are actually not that common.

Good deposits are rare and only 12 countries produce potash. The top producing country is Canada, followed by Russia, Belarus, Germany, and the U.S. Here in the U.S., two potash mines are located in Utah (Moab and Wendover). Other potash producers are Israel, Jordan, Brazil, and China. The Canadian province of Saskatchewan holds more than 50% of the world’s potash reserves – enough to meet global demand for several hundred years – and has 37% of current global production capacity. Lesser producers include Chile, Spain and the UK.

Nearly 95% of global potash production is currently used as fertilizer and for very good reasons.

POTASH AND PLANTS – A HAPPY COMBINATION

Plants have even more potassium in them than they have nitrogen, making potassium a key nutrient for plant development. This is because potassium is something every healthy plant needs in order to grow. Potassium:

- Prevents premature ripening,
- Helps plants recover from frost damage or being waterlogged,
- Builds thicker and stronger cell walls in plants that are better able to resist predators,
- Increases the size and weight of grain,
- Increases resistance to drought, and
- Decreases the likelihood of plant disease

Potash is part of a long farming cycle that has been going on as early as the third century BC, in the form of manure and ashes. Of course, the Romans did not realize that it was potassium; they just knew these materials made their plants flourish.

Potash, is the workhorse of plant nutrition:

- Because it recycles so well, it is sustainable in farming.
- The potassium it contains balances nutrients such as nitrates by helping plants absorb them more efficiently.
- That same potassium helps water and nutrients move within the plant.

Fertilizers are needed to obtain high yields because they supply crops with the nutrients the soil lacks. By adding fertilizers, crop yields can often be doubled or even tripled. The UN Food and Agriculture Organization (FAO) Fertilizer Programme undertook extensive demonstrations and trials in 40 countries over a period of 25 years. The weighted average increase resulting from the best fertilizer treatment for wheat was about 60%.

Fertilizers ensure the most effective use of both land and water. Where rainfall is low or crops are irrigated, the yield per unit of water used may be more than doubled and the rooting depth of the crop increased through fertilizer application.

When one considers the enormous number of people who need to be fed, and the fact that potash, especially, is both abundant and easily mined in certain areas, using potash to fertilize soil continues to be one of the smartest things a farmer can do. The agricultural use of potash as a fertilizer is a big part of the solution for feeding the world’s hungry people. It may be an old tool, but its use is still indispensable when it comes to growing nutritious food.

THE FUTURE

The world demand for potassium has increased over the last few years and current demand – worldwide – is a staggering 55 million tons per year. Assuming even a modest 2% growth in demand, the truth is, the world will need a new potash mine every two years.

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While potash is far from the most glamorous product of the global mining industry; it is, however, one of the most important commodities mining provides to the world. ✷

COMPREHENSION QUESTIONS

1. What did Thomas Malthus say in “An Essay on the Principle of Population”?

2. How many people were there in the world on July 1, 2011?

3. What did the U.N. call the looming global food crisis?

4. How many pounds of grain are necessary to make a pound of beef?

5. What is potash?

6. Which country produces the most potash?

7. What impact does fertilizer have on crop yields?

8. How much potash is currently being used by farmers?