

**Chapter 1 : USDA - National Agricultural Statistics Service Homepage**

*Fertilizer Resources of the United States Message From the President of the United States Transmitting a Letter From the Secretary of Agriculture, Together With a Preliminary Report by the Bureau of Soils, on the Fertilizer Resources of the United States.*

Nitrogen-containing fertilizers can cause soil acidification when added. Accumulation of toxic elements[ edit ] Cadmium[ edit ] The concentration of cadmium in phosphorus-containing fertilizers varies considerably and can be problematic. Continuous use of high-cadmium fertilizer can contaminate soil as shown in New Zealand [55] and plants. Consequently, the widespread use of phosphate fertilizers has increased soil fluoride concentrations. The most common toxic elements in this type of fertilizer are mercury, lead, and arsenic. Highly pure fertilizers are widely available and perhaps best known as the highly water-soluble fertilizers containing blue dyes used around households, such as Miracle-Gro. These highly water-soluble fertilizers are used in the plant nursery business and are available in larger packages at significantly less cost than retail quantities. Some inexpensive retail granular garden fertilizers are made with high purity ingredients. Trace mineral depletion[ edit ] Attention has been addressed to the decreasing concentrations of elements such as iron, zinc, copper and magnesium in many foods over the last 50â€”60 years. In Western Australia deficiencies of zinc, copper, manganese, iron and molybdenum were identified as limiting the growth of broad-acre crops and pastures in the s and s. The effects can be combined into an equivalent amount of carbon dioxide. The amount varies according to the efficiency of the process. The figure for the United Kingdom is over 2 kilogrammes of carbon dioxide equivalent for each kilogramme of ammonium nitrate. Atmosphere[ edit ] Global methane concentrations surface and atmospheric for ; note distinct plumes Through the increasing use of nitrogen fertilizer, which was used at a rate of about million tons of N per year in , [90] [91] adding to the already existing amount of reactive nitrogen, nitrous oxide N<sub>2</sub>O has become the third most important greenhouse gas after carbon dioxide and methane. It has a global warming potential times larger than an equal mass of carbon dioxide and it also contributes to stratospheric ozone depletion. These emissions contribute to global climate change as methane is a potent greenhouse gas. In , Chinese governments have started to partially withdraw fertilizer subsidies, which also include contributions to fertilizer transportation, electricity and natural gas use in the industry. Because of this, professional farmers who run large-scale farms have already used less fertilizers since then under the fertilizer prices went up. If large-scale farms keep reducing their use of fertilizer subsidies, they have no choice but to optimize the fertilizer they have which would therefore gain an increase in both grain yield and profit. The former encourages soil fertility using local resources to maximize efficiency. Organic agriculture avoids synthetic agrochemicals. Conventional agriculture uses all the components that organic agriculture does not use. History of fertilizer Management of soil fertility has been the preoccupation of farmers for thousands of years. Egyptians, Romans, Babylonians, and early Germans all are recorded as using minerals and or manure to enhance the productivity of their farms. John Bennet Lawes , an English entrepreneur , began to experiment on the effects of various manures on plants growing in pots in , and a year or two later the experiments were extended to crops in the field. One immediate consequence was that in he patented a manure formed by treating phosphates with sulfuric acid, and thus was the first to create the artificial manure industry. In the succeeding year he enlisted the services of Joseph Henry Gilbert , with whom he carried on for more than half a century on experiments in raising crops at the Institute of Arable Crops Research. A factory based on the process was built in Rjukan and Notodden in Norway, combined with the building of large hydroelectric power facilities. A maize crop yielding 6â€”9 tonnes of grain per hectare 2. In the s, the Tennessee Valley Authority National Fertilizer Development Center began developing sulfur-coated urea; sulfur was used as the principal coating material because of its low cost and its value as a secondary nutrient. They typically provide 6 to 16 weeks of delayed release in turf applications. When a hard polymer is used as the secondary coating, the properties are a cross between diffusion-controlled particles and traditional sulfur-coated.

**Chapter 2 : Details - Fertilizer resources of the United States. - Biodiversity Heritage Library**

*Excerpt from Fertilizer Resources of the United States: Message From the President of the United States Transmitting a Letter From the Secretary of Agriculture, Together With a Preliminary Report by the Bureau of Soils, on the Fertilizer Resources of the United States.*

To analyze and research the Water-soluble Fertilizer status and future forecast in United States, European Union and China, involving sales, value revenue , growth rate CAGR , market share, historical and forecast. To present the key Water-soluble Fertilizer manufacturers, presenting the sales, revenue, market share, and recent development for key players. To split the breakdown data by regions, type, companies and applications To analyze the global and key regions market potential and advantage, opportunity and challenge, restraints and risks. To identify significant trends, drivers, influence factors in global and regions To analyze competitive developments such as expansions, agreements, new product launches, and acquisitions in the market In this study, the years considered to estimate the market size of Water-soluble Fertilizer are as follows: If we take a glance at the top 10 leading agricultural countries, it is found out that the economies of several regions including China and India mainly depend on agriculture. In the past few years, it has been observed that the conception of policymakers and economist about the agricultural role in the development of the economy has witnessed the important evolution. While examining the various markets in the agricultural sector, the expert team of analysts has ensured to keep the utmost accuracy after the profound assessment of the agricultural industry backed by unique research methodology. Brief information about mergers and acquisition between leading players in the industry makes this report a unique one This report has covered detail information on key players functioning in the agricultural industry. Significant information about leading companies along with their broad strategies has mentioned in this report in a bid to stay as leaders in the agricultural industry. Key companies in the market have profiled individually to get a dashboard view of the markets which fall under the purview of the agricultural industry. Strategic analysis, company details, product portfolio, and company description are some of the other important elements covered in this report. Segmental Analysis QY Research has evaluated various segments such as by product, by application, and by the material. Such comprehensive information about various markets in the agricultural industry is important to identify different types of trends, drivers, restraints, and opportunities. While assessing the market forecast, absolute dollar opportunity is generally overlooked, however, this exclusive report published by QY Research have analyzed several key components of the agricultural industry. Furthermore, QY Research has also come up with market attractiveness index for the better understanding of the segments in terms of their growth and performance. Market attractiveness index would help the target audience in tapping the real market opportunities. Apart from studying the main regions, QY Research has also ensured to cover niche countries such as Vietnam, Indonesia, Thailand, Malaysia, Mexico, and Italy to give crystal clear scenario of the market. In terms of regions, an agricultural industry is thriving in the Asia-Pacific region, particularly in China and India. Various new manufacturers are entering the market, providing ample opportunities to markets under agriculture industry to flourish over the forecasted period. All the segments covering the agriculture industry are analyzed based on Basis Point Share. Analysts in QY Research have sized up current market which forms the base of future development of the industry. Complicated market data along with segmental splits and the base number has been developed with the help of thorough secondary research. Based on different verticals, entire data is triangulated. Primary interviews with various manufacturers, suppliers and distributors have been taken in to consideration to make this report a unique one. The reasons for buying this report This report will be used as a comprehensive guide by the new entrants in the agricultural industry, as it gives crystal clear information about this lucrative and vast market. The team of analysts in QY Research have covered the detail information about all major types of agricultural equipment, various types of seeds, and agrochemicals in this research report. The research analysts went the extra mile to extract the comprehensive information about important regions across the globe where agriculture industry is flourishing rapidly and is expected to create robust development in the coming decade. By referring this report, the new players can get a crystal clear

picture about the level of competition they will be facing while penetrating new products in the industry, while already established players in the industry will get a fair idea about the scope of the overall market before making their own strategies. An invaluable data is provided in this report for the new entrants in the agriculture sector. With more than successful consulting projects, QY Research publishes reports every year. This years old market research company has more than global clients. QY Research operates in the entire range of the knowledge and consulting value chain, offering decision support services that include research, industry insights and consulting in the EMCEAFEC sector.

Chapter 3 : Peak phosphorus - Wikipedia

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Top of Page Nutrient pollution Sources and Solutions: Agriculture - Animal manure, excess fertilizer applied to crops and fields, and soil erosion make agriculture one of the largest sources of nitrogen and phosphorus pollution in the country. Estimated Animal Agriculture Nitrogen and Phosphorus from Manure - Animal agriculture manure is a primary source of nitrogen and phosphorus to surface and groundwater. Manure runoff from cropland and pastures or discharging animal feeding operations and concentrated animal feeding operations CAFOs often reaches surface and groundwater systems through surface runoff or infiltration. Top of Page Commercial fertilizer Commercial Fertilizer Purchased - Fertilizer is a primary source of nitrogen and phosphorus. Fertilizer use and run-off can be significantly reduced by appropriate fertilizer application through: Current information indicates that: Some fertilizers and soil amendments that are not derived from waste materials can nevertheless contain measurable levels of heavy metals such as: This includes hazardous wastes, when such wastes can be used as safe and effective substitutes for virgin raw materials. EPA is examining whether some fertilizers or soil conditioners contain potentially harmful containment levels. However, the Agency believes that some wastes can be used beneficially in fertilizers when properly manufactured and applied. Concerns have been raised regarding the use of certain wastes in the manufacture of agricultural fertilizers and soil amendments, and the potential for ecological or human health risks, as well as crop damage, when such fertilizers are applied to farmlands. For fertilizers that contain hazardous waste, EPA standards specify limits on the levels of heavy metals and other toxic compounds that may be contained in the fertilizer products. These concentration limits are based on the "best demonstrated available technology" for reducing the toxicity and mobility of the hazardous constituents. However, fertilizer made from one specific type of hazardous waste air pollution control dust generated during steel manufacturing is not subject to those concentration limits. This exemption is based on a finding by EPA that the composition of this particular waste is comparable to the materials that would otherwise be used to make this type of fertilizer, and that its typical use is not harmful. All other fertilizers that contain hazardous wastes are, however, subject to the contaminant concentration limits established by EPA. For food chain crops, farming can occur on land where hazardous constituents are applied as long as the agricultural producer receives a permit from the EPA Regional Administrator. Agricultural producers must demonstrate that there is no substantial risk to human health caused by the growth of such crops. Unless prohibited by other State or local laws, agricultural producers can dispose of solid, non-hazardous agricultural wastes on their own property. Contact Us to ask a question, provide feedback, or report a problem.

## Chapter 4 : Fertilizer resources of the United States. - Biodiversity Heritage Library

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Background[ edit ] Phosphate rock mined in the United States, data from US Geological Survey The peak phosphorus concept is connected with the concept of planetary boundaries. Phosphorus, as part of biogeochemical processes, belongs to one of the nine "Earth system processes" which are known to have boundaries. As long as the boundaries are not crossed, they mark the "safe zone" for the planet. By comparison, average rocks contain 0. In , the United States Geological Survey USGS estimated that economically extractable phosphate rock reserves worldwide are 68 billion tons, while world mining production in was 0. The countries with most phosphate rock commercial reserves in billion metric tons: Morocco 50, China 3. Unless systems change, shortages of rock phosphate could lead to shortages of inorganic fertiliser, which could in turn reduce the global food production. Phosphate mining in the United States US production of phosphate rock peaked in at Guano In Garcilaso de la Vega wrote the book "Comentarios Reales" in which he described many of the agricultural practices of the Incas prior to the arrival of the Spaniards and introduced the use of guano as a fertilizer. As Garcilaso described, the Incas near the coast harvested guano. It has been reported that, at the time of its discovery, the guano on some islands was over 30 meters deep. Phosphorus conservation and recycling[ edit ] Monsanto phosphorus production plant, Soda Springs, Idaho, U. Once consumed by humans, it can end up in the local environment in the case of open defecation which is still widespread on a global scale or in rivers or the ocean via sewage systems and sewage treatment plants in the case of cities connected to sewer systems. An example of one crop that takes up large amounts of phosphorus is soy. In an effort to postpone the onset of peak phosphorus several methods of reducing and reusing phosphorus are in practice, such as in agriculture and in sanitation systems. The Soil Association , the UK organic agriculture certification and pressure group, issued a report in "A Rock and a Hard Place" encouraging more recycling of phosphorus. Agricultural methods such as no-till farming , terracing , contour tilling, and the use of windbreaks have been shown to reduce the rate of phosphorus depletion from farmland. These methods are still dependent on a periodic application of phosphate rock to the soil and as such methods to recycle the lost phosphorus have also been proposed. Perennial vegetation, such as grassland or forest, is much more efficient in its use of phosphate than arable land. Strips of grassland and or forest between arable land and rivers can greatly reduce losses of phosphate and other nutrients. Excreta reuse The oldest method of recycling phosphorus is through the reuse of animal manure and human excreta in agriculture. Via this method, phosphorus in the foods consumed are excreted, and the animal or human excreta are subsequently collected and re-applied to the fields. Although this method has maintained civilizations for centuries the current system of manure management is not logistically geared towards application to crop fields on a large scale. At present, manure application could not meet the phosphorus needs of large scale agriculture. Despite that, it is still an efficient method of recycling used phosphorus and returning it to the soil. Sewage sludge[ edit ] Sewage treatment plants that have an enhanced biological phosphorus removal step produce a sewage sludge that is rich in phosphorus. Various processes have been developed to extract phosphorus from sewage sludge directly, from the ash after incineration of the sewage sludge or from other products of sewage sludge treatment. This includes the extraction of phosphorus rich materials such as struvite from waste processing plants. Ostara has eight operating plants worldwide.

## Chapter 5 : Agriculture Nutrient Management and Fertilizer | Agriculture | US EPA

*Message from the President of the United States, transmitting a letter from the secretary of agriculture, together with a preliminary report by the Bureau of soils, on the fertilizer resources of the United States.*

## Chapter 6 : Agriculture | US EPA

*Loading Fertilizer resources of the United States. Message from the President of the United States, transmitting a letter from the secretary of agriculture, together with a preliminary report by the Bureau of soils, on the fertilizer resources of the United States.*

## Chapter 7 : Water Resources

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## Chapter 8 : Resources | United States | Sims Fertilizer & Chemical

*Here's our full list of resources for farmers, from manufacturer links and a tank mixing guide to weed germination.*

## Chapter 9 : Fertilizer Resources of the United States : United States Dept of Agriculture :

*Fertilizer Use and Price This product summarizes fertilizer consumption in the United States by plant nutrient and major fertilizer products as well as consumption of mixed fertilizers, secondary nutrients, and micronutrients for through the latest year for which statistics are available.*