



Company Description

Omani Crop Care aims to be a leading fertilizer production and distribution company based in Oman. Our primary focus is on manufacturing high-quality fertilizers to meet the diverse agricultural needs of the Omani market. With a strong commitment to sustainability and environmental stewardship, we strive to enhance the agricultural productivity of Oman while minimizing our ecological footprint.

At Omani Crop Care, we implement the best practices to produce a wide range of fertilizers tailored to the specific requirements of local crops. Our product portfolio includes nitrogen-based, phosphorus-based, and potassium-based fertilizers, as well as compound fertilizers that combine essential nutrients in optimal ratios for the harsh, dry Omani soil to maximize crop yield, enhance soil health and improve the overall sustainability of Oman's agriculture.



Market Analysis

Fertilizer is a key component of modern agriculture, playing a crucial role in enhancing crop productivity and ensuring food security.

Market size and growth:

The global fertilizer market has witnessed steady growth over the years and is expected to continue expanding. Factors driving this growth include population growth, increasing food demand, shrinking arable land, and the need to improve agricultural productivity. The market size is influenced by both organic and inorganic fertilizers.

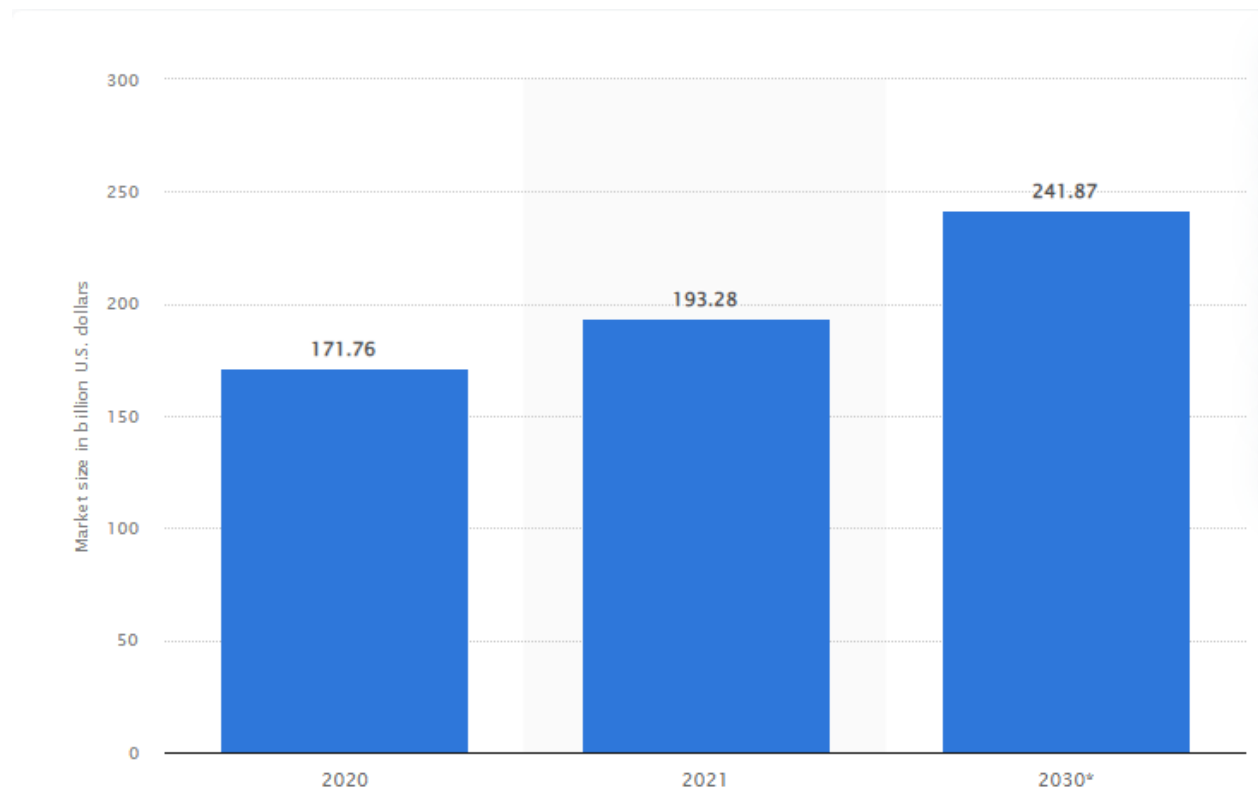


Figure 1 Global Fertilizer growth

The Middle East is a region with significant agricultural activities, and the demand for fertilizers is substantial due to the need to improve soil fertility and enhance crop yields. Several factors contribute to the market dynamics of fertilizers in the Middle East:

- 1) **Growing Population and Food Security:** The Middle East has experienced a rapid population growth rate, leading to increased food demand. Fertilizers play a crucial role in boosting agricultural productivity to meet the food requirements of the expanding population.
- 2) **Limited Arable Land and Water Resources:** The Middle East is characterized by arid and semi-arid climates, with limited arable land and scarce water resources. Fertilizers help optimize crop growth by providing essential nutrients and improving soil quality, compensating for these limitations.
- 3) **Shift Towards Modern Agricultural Practices:** Many countries in the Middle East are embracing modern agricultural practices, such as greenhouse farming and precision agriculture. These practices require a higher utilization of fertilizers to ensure optimal crop growth in controlled environments.
- 4) **Government Support:** Governments in the Middle East are implementing various initiatives to promote agricultural development and self-sufficiency. This support includes subsidies and incentives for farmers to use fertilizers, thereby driving the demand in the market.
- 5) **Import Dependency:** The Middle East relies heavily on fertilizer imports to meet its demand. While the region possesses significant oil and gas reserves, which serve as feedstocks for the production of fertilizers, the domestic manufacturing capacity is limited. This dependency on imports exposes the market to global price fluctuations and supply chain disruptions.
- 6) **Growing Organic Farming Practices:** There is an increasing trend towards organic farming in the Middle East, driven by concerns for food safety and environmental sustainability. While organic fertilizers are gaining popularity, the market for conventional fertilizers remains dominant due to their higher efficiency and cost-effectiveness.

In conclusion, the fertilizer market in Oman and the Middle East is driven by the demand from the commercial agriculture sector, government support, and the adoption of modern farming practices. Although the market size is relatively small (510 million USD), it is expected to experience moderate growth in the coming years, supported by initiatives to achieve food security and sustainable agriculture.

Products

Omani Crop Care is aiming to produce 3 types of fertilizer:

- A. Nitrogen-based Fertilizers: Nitrogen fertilizers, such as urea and ammonium nitrate, are widely used in Oman due to their ability to promote vegetative growth.
- B. Phosphorus-based Fertilizers: Phosphorus fertilizers, such as diammonium phosphate (DAP) and superphosphate, are crucial for root development and flowering in plants.
- C. Potassium-based Fertilizers: Potassium fertilizers, such as potassium chloride and potassium sulfate, are essential for overall plant health and resistance to diseases.

We aim to sell them in 1KG, 5KG, 10KG and 25KG supplies in the local market and 1 TON in the international market. We will be able to undersell our competitors because all the fertilizer that is sold in the local Omani market is imported.

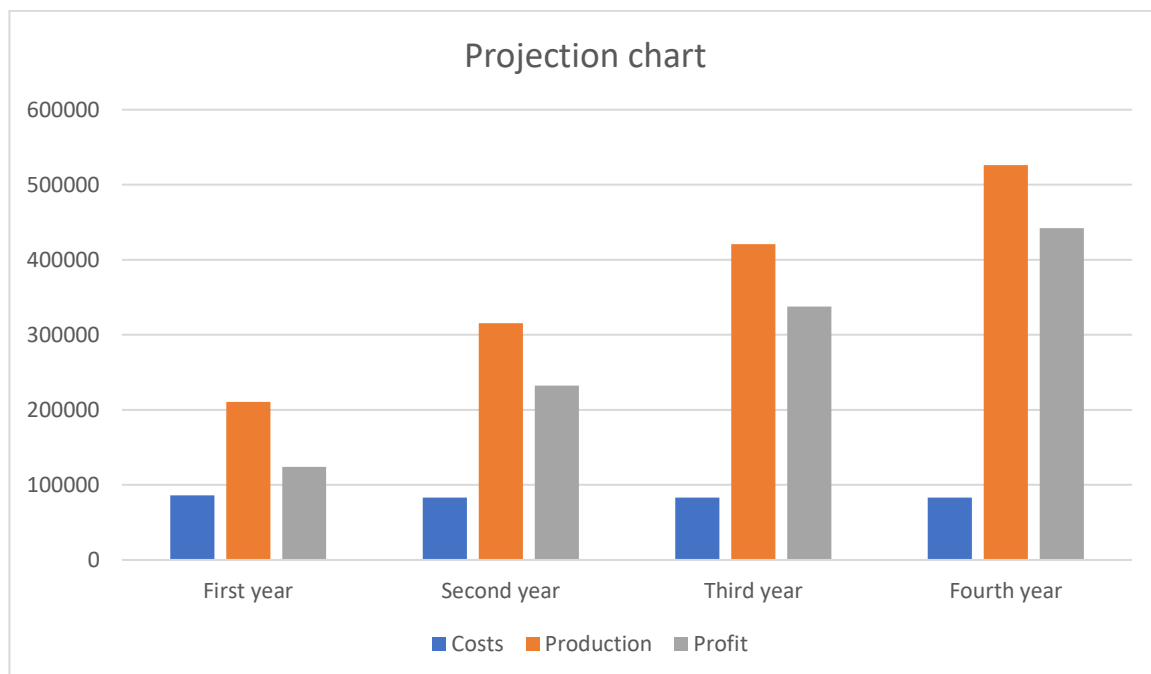
Our costs of production and prices will be:

Local Market (USD)	1KG	5KG	10KG	25KG
Production Costs	0.2	1.05	2.1	5.26
Selling for	1	5	10	25
Profit	0.8	3.95	7.9	20.26

Start-up Costs

Part	Cost
Machinery	20000
Warehouse	22836
Labor	30420
Transport	13000
First year costs:	86256
Must sell 70.6 Tons to make it profitable	

- Machinery can produce 30,000 tons a year with 4.2 tons/hour.
- Warehouse rental for 338 m2.
- Transport for 2 used trucks.



With a starting production of 1000 tons a year and an increase of 500 tons every year.

Fertilizer Production

Definitions

NPK – refers to Nitrogen, Phosphorous, and Potassium. These are the three main nutrients needed for plant growth. Typically, fertilizers will have numbers labelled such as 2-1-0, or 20-8-2. These numbers represent the ratio of nutrient concentration within the soil medium. For example, 20-8-2 means that within any given amount of fertilized soil, there is 20% nitrogen, 8% phosphorous, and 2% potassium.

Note:

- soil typically already has a certain NPK ratio, therefore, to have an accurate measurement its best to use a soil sensor prior to adding the fertilizing compounds. Furthermore, there are nutrients and compounds that are important to plant growth, however, NPK are the big three and the lesser nutrients are likely already in the soil.
- Each fertilizer is highly concentrated and could damage the plants, as with all liquid fertilizers, the user must dilute it when adding it to soil.
- Best for user to monitor NPK of soil with a sensor.

Compounds

- Urea
- Monopotassium Phosphate
- Potassium chloride

Mixing

There are two ways of mixing and processing the fertilizer, the first method is the most common in the industry due to user convenience and is less harmful. For the sake of creating a sample, its best to use the second method.

- Granular Fertilizer:

Mix the compounds thoroughly to ensure even distribution of nutrients. This is crucial because uneven distribution can cause over-fertilization and potentially burn plants.

If the compounds are not already in granular form, you may need to granulate them. This typically involves forming a mixture with a small amount of water, extruding the resulting paste, and then drying and crushing it to create granules. This is a process that is usually done on an industrial scale with specialized equipment.

- **Liquid Fertilizer:**

Dissolve the compounds in water. The compounds should be soluble enough to create a concentrated solution. Note that the solubility of some compounds may be pH dependent.

Make sure to mix the solution thoroughly so that the nutrients are evenly distributed.

Liquid Fertilizers:

Nitrogen Fertilizer (2-0-0):

Measure 42.83g of urea and dissolve it in 1 L of water.

Phosphorous Fertilizer (0-2-0):

Measure 87.84g of Monopotassium Phosphate and dissolve it in 1 L of water.

Potassium Fertilizer (0-0-2):

Measure 38.12g of Potassium Chloride and dissolve it in 1 L of water.

Costs:

- Each of these compounds can be purchased online.

Compound (500 g)	Price (Canadian Dollars)
Urea	\$114.00
Monopotassium Phosphate	\$104.00
Potassium Chloride	\$104.00
Peat Moss	\$22-40

Granular Fertilizers (2-2-2):

Nitrogen (N) from Urea $[(\text{NH}_2)_2\text{CO}]$: If you need 2% of the fertilizer to be Nitrogen, then for every 100g of fertilizer, you need 2g of Nitrogen. Since Urea is 46.7% nitrogen by weight, you would need approximately 4.28g of Urea to provide 2g of nitrogen.

Calculation: $(2\text{g N} / 0.467) = 4.28\text{g Urea}$

Phosphorus (P) from Monoammonium Phosphate $[\text{NH}_4\text{H}_2\text{PO}_4]$: If you need 2% of the fertilizer to be

Phosphorus, then for every 100g of fertilizer, you need 2g of Phosphorus. Since Monoammonium Phosphate is 22.76% phosphorus by weight, you would need approximately 8.78g of Monoammonium Phosphate to provide 2g of phosphorus.

Calculation: $(2\text{g P} / 0.2276) = 8.78\text{g Monoammonium Phosphate}$

Potassium (K) from Potassium Chloride (KCl): If you need 2% of the fertilizer to be Potassium, then for every 100g of fertilizer, you need 2g of Potassium. Since Potassium Chloride is 52.44% potassium by weight, you would need approximately 3.81g of Potassium Chloride to provide 2g of potassium.

Calculation: $(2\text{g K} / 0.5244) = 3.81\text{g Potassium Chloride}$

Once you have measured out the correct amounts of each compound:

Mixing:

Mix the urea, monoammonium phosphate, and potassium chloride together thoroughly. This can be done in a large container or a mechanical mixer, depending on the quantity of fertilizer you're making. You want to ensure the nutrients are evenly distributed throughout the mixture.

Adding Peat Moss: Add peat moss to the mixture. The quantity will depend on your desired final volume/weight, but the remaining weight after adding the nutrients should be peat moss. For instance, for 100g of fertilizer, you would use approximately 83.13g of peat moss.

Granulation:

To turn the mixed fertilizer into granules, you can use a granulator or pelletizer. If this equipment isn't available, in a small-scale setting, you can add a little water to the mixture to make a paste, form this paste into small granules or pellets, and then allow these to dry thoroughly.