Fertiliers organ Vs inorganic

To make sure we use our land efficiently to get as much growth from it as we can, we have chemicals such as pesticides and fertilizers to make sure farmers harvest a maximum yield each year, but how much do we know about these chemicals?

There are two main types of fertilizers, organic and inorganic. Organic fertilizers are organic materials, mainly made of animal and plant wastes. Inorganic fertilizers are concentrated source of macronutrients. They are usually in powdered form, which can be added directly into the field.

First of all, let us consider the advantages of using organic fertilizers. Organic materials can be made by farmers themselves as they can be produced from waste materials from cattle, i.e. from cow manure. Sometimes, farmers can fertile their land by having a mixed farm (gazing animals and growing crop at the same land). Animal waste can be applied to plant crops, making soil more fertile. This can also save farmers money to purchase chemical fertilizers elsewhere.

Unlike inorganic fertilizers, organic fertilizers do not damage soil structure; they can help to reduce soil erosion by improving the soil structure such as the water-holding properties. Improving the water–holding capacity of the soil also gives a distinct advantage to areas that have arid climates.

As a result of improving the soil structure of lands, it decreases the probability of desertification. Using organic materials also gives advantages to areas that have relatively cold climate, as organic fertilizer can generate heat and are therefore able to warm up cold lands, increase the growth rate of crops.

Farmers often have problems with over fertilization when using fertilizers. With organic materials, the probability of this is far less as the concentrations of nutrients in organic materials are relatively low in comparison to inorganic fertilizers.

Organic fertilizers provide a slow release of nutrients to plants, as micro-organisms need to break down the organic material, making the nutrients into inorganic, water soluble form before plant can absorb it. As a result, it decreases the probability of excess fertilizers leaching out of the soil and contaminating nearby water resources.

However, there is a negative side to almost everything; some of the advantages of

using organic materials may also be its disadvantages.

As mentioned above, organic fertilizers are made from waste materials, the size of them is massive compared to inorganic fertilizers. They take up a massive storage space, which may cause problems to farmers if land size is limited.

When applying organic fertilizers into crops, farmers do not know the exact type and amount of the nutrients being added, which may affect the yield of crops.

As organic materials produce heat, in warm areas, organic fertilizers may warm up the field making the temperature too high for some crops to grow, lowering the growth rate and therefore the yield.

In addition, fertilizers produced by livestock (urine and faeces) may be harder to dispose of, leading to the indirect increase of nitrate and other ions to the surrounding areas, which can pollute surrounding ponds and steams.

Finally, more time and labor are needed to apply a given amount of nutrients into fields in comparison with inorganic fertilizers, as they are not in powdered form inorganic fertilizers are.

As mentioned above, there is a slow release of nutrient due to microorganisms' activities. This can be an obvious disadvantage, as organic materials cannot supply sufficient nutrients to crops in a short period of time, so farmers would have to use inorganic fertilizers if there is an immediate need for nutrients.

Inorganic fertilizers are the other major type of fertilizers used in the farming industry. They are used in intensive farming to maximize crop field.

One of the main advantages is that the exact types of nutrient needed are immediately available to crop in a short period of time. The amount of nutrients can also be carefully calculated to make sure enough, but not excessive amount of nutrients are used.

Inorganic fertilizers can be easily stored as they are in neat packages, therefore take up a relatively small storage space compared to organic fertilizers. Further more, they are easy to apply, as they are manufactured into many convenient forms i.e. small crystals and powdered form.

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Inorganic fertilizers are much more concentrated than organic ones, therefore less amount of fertilizers would need to be applied. This helps to decrease the labor needed and also lower the cost of the fertilizers as less is needed.

There are a number of disadvantages associated with using inorganic fertilizers.

As inorganic fertilizers tend to be more concentrated, they are even more easily washed into the soil below plant roots to surrounding streams ponds and rivers. This speeds up the growth of algae and photosynthetic bacteria that live in water, and the death of these provide a rich source for decomposers, which use up most of the oxygen present in rivers in the process of decay. Other organisms then die because of the lack of oxygen, their bodies then add to the food source of the decomposers, which further worsen the situation - known as eutrophication. Fertilizers can also leach into groundwater, into water pipes, polluting drinking water and putting our health at risk.

Other than leaking into rivers, excess nitrogen can also be converted into nitrous oxide, causing major atmospheric pollution.

Inorganic fertilizers also damage microorganisms in soils, causing them to become dehydrated, destroying the soil-food web. In addition, inorganic fertilizers can also alter the soil PH, which disrupts the microbial environment even more. This causes the decline of the biodiversity of the soil-food web, making crops more dependent on chemical fertilizers, causing soil to be devitalized, which may lead to desertification as a result of pro-longed use of inorganic fertilizers. Damaging microbial life causes plants to lose their essential trace minerals, therefore the soil no longer has a wide range of nutrients. Furthermore, as inorganic phosphorous replaces calcium in the cell wall; crops become less resistant to insects and disease. Although this is overcome by using pesticides, the cycle continues making soil more toxic each time, causing severe problems to the environment.

Although recently, there is a slight increase towards using organic fertilizers, as it is believed to be more environmentally friendly, both fertilizers have their own positive and negative factors. Therefore, whether a farmer chose to use organic, inorganic or even a combination of both fertilizers depends on many circumstances. However, organic and inorganic fertilizers both help significantly in increasing crop yield each year, and therefore are an essential tool in the food industry.

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