

Fertilisers

The following are necessary for the healthy growth of plants Nitrogen - protein manufacture, strong healthy leaves Phosphorous - root development Potassium - survival of frost and disease Fertilisers are substances added to the soil to replace elements used up by plants. And are necessary for the healthy growth of plants Haber Process $N_2 + 3H_2 \rightarrow 2NH_3$ Its an exothermic reaction Factors affecting dynamic equilibrium High pressure favours the side with least molecules Low temperature favours the exothermic reaction Actual Conditions Used High pressure (200-400 atmospheres) Low temp. (450C) Iron used as catalyst Where Raw Materials are gained Nitrogen from the air (Oxygen and Carbon Dioxide removed) Hydrogen by reacting steam with natural gas Porcess Gasses fed into catalyst chamber unreacted Nitrogen + Hydrogen (both insoluable)+ Ammonia (soluable) All cooled, and you get liquid ammonia, leaving nitrogen and hydrogen gasses which are recycled Nitric Acid 1) Oxidation of ammonia \rightarrow nitrogen dioxide ammonia + oxygen \rightarrow nitrogen dioxide + water $4NH_3 + 7O_2 \rightarrow 4NO_2 + 6H_2O$ 2) Nitrogen dioxide + oxygen + water \rightarrow Nitric Acid $4NO_2 + 3O_2 + 2H_2O \rightarrow 4HNO_3$

About the Author

Source: <http://crampuppy.com>