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# Advantages And Disadvantages Of Genetically Modified Organisms (GMOs)

GMOs are transgenic organisms carrying foreign genes either from virus, bacteria, plants, humans in order to improve their genetic structure for particular purposes. In this procedure the beneficial or gene of interest is identified which is then isolated and multiplied and then inserted into the plant whose genomic structure is desired to change.

## Advantages

As we know as the world population is increasing day by day and in this particular regard agricultural land is decreasing in order to meet shelter demand so GMOs are introduced to increase commodity number within same cropping area to feed a massive number or take control over famine.

GMOs are designed to tackle the shortage of food and to produce food with better nutrient contents or to add extra nutrient and minerals which were not naturally existed in that particular food item or if exist the amount is very small so through GMOs the genes responsible for desired minerals, vitamins are inserted to increase from the original value just like fortification of iron content in chickpea so the poor people who could not use milk or other commodities for iron should meet their iron requirement cheaply by using fortified chickpea.

GMOs are designed to increase the shelf life of perishable food commodities which makes farmers possible to escape from postharvest loses which occurred due to perishability of particular food items and now it is much easier to distribute food to far off places within the country or even in other parts of world too which means more economic gains to state.

GMOs use lesser resources as compare to non GMOs so by using genetically modified crops energy, soil nutrients and water can be conserved and the capital used is also conserved and it is relief for farmers.

GMOs are designed to tackle drought problems as such plants are designed which grow as well in drought conditions or need very less water for growth and in this way that area is also cultivated which is water deficient. GMOs are more tolerant to pest, weeds and other hazardous effects so the capital use in terms of pest control, weeds is conserved which is also relief to farmer. GMOs are also beneficial as they produce their own pesticide as in Bt corn and Bt cotton as this gene is isolated from bacteria which toxin for harmful insect causing massive

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destruction in particular crops so in this way GMOs conserve plant varieties from extinction and also saved expenses of farmers used in terms of pesticides and through GMO the beneficial insects can also be saved as plant produce its own toxin which would otherwise killed during spraying of insecticides.

GMOs are designed to mature earlier than the usual time to escape the insect attack of that particular season and the crop duration is also decreased so both time and space is saved for cultivation of another crop which significantly benefits farmer fiscally.

GMOs are designed to conserve the environment and has great effect on environment as they need lesser farm operations thus inputs required for farm operations like burning of fuel and increase content of carbon dioxide due to aerosol and fossil fuel burning can be avoided.

GMOs are designed to tackle allergies that occur due to some specific proteins and thus such proteins are removed from that particular genomic system and product becomes acceptable to consumer and example of such practice is wheat as gluten free wheat has been created.

GMOs are also designed to attain specific taste, color, aroma and texture which is created according to taste of that particular place in order to made the product acceptable to consumer and example of such practice is golden rice in which a gene from carrot is isolated and inserted into rice which imparts golden color to it.

#### Disadvantages

GMOs are not considered safe for environment as well as for humans and other living organisms its early outcomes seems pleasant and magical but their after effects are quite hazardous and drastic. In short its short term solution of a problem with long term problems.

GMOs are considered unhealthy for living organisms as they effect organs, gastrointestinal and immune system disorders and quick aging and infertility and the toxicity produced by GM crops found to be part of blood. The new unidentified genes if become part of genomic system can show additive effect with already present gene and can produce specific protein in surplus amount and shifts the system from normality than such disturbance could lead towards cancer.

GMOs are designed to escape the effect of herbicides that are used to kill weeds which show competition with main crop in terms of utilization of underground resources like nutrients and water but with passage of time weeds also pass through evolution process and it develop resistance against herbicides and thus more powerful herbicides and in more greater amount herbicides are used which ultimately increased extra burden on farmers pocket and moreover the residual effects toxic herbicides impart drastic effect to human health and cause various

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allergies and fatal diseases.

GMOs are responsible for strengthening various viruses which have hazardous effects on crops and example of such case is Bt cotton which is actually a GM crop is susceptible to cotton leaf curl virus whereas the previous non GM cotton crop have natural resistance against cotton leaf curl virus which is a major cause of cotton production demise throughout the world.

GMOs are considered responsible for creating superbugs as plants produce insecticides on its own then bugs also pass through evolutionary process and they got change their genomic structure in order to survive against such varieties and then come up with new strains having more resilience to factors responsible for their demise.

GMOs are supposed to be responsible for decreasing biodiversity as due to the inclusion of GM crops the gene flow occur especially in the areas where crop is initially started to grow and thus the old natural wild type gets sense from new ones and the gene pool got contaminated which very essential in case of an epidemic breakout then the previous genes or gene pools are required to tackle that problem and hence pest and weeds attain resistance moreover due monoculture cropping the natural ecosystem disturbs and equilibrium shifts from normality as farming community starts growing particular which is apparently more profit generating and moves towards that particular crop and hence due to demise of other crops the insects and organisms whose natural habitat are other crops star demising as well.

There is another concern about GMOs is that they pollute the non GMOs cropping pattern and do contamination of organic food as it is very difficult to limit GMO seed to the area where it is practiced to grow and it travels to far off places and do contamination.

GMOs are mostly patented and secured by law so the farming community interested to grow GMOs have to sign an agreement which strictly bound them to take preventive measures to avoid contamination and the farmer who does not take preventive measures should brought to court in case of breaching the agreement and the farmers are not allowed to grow F1 generation as well.

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