**Hybrid Seeds: a Boon or Bane**

**Introduction:**

Seeds is the most Important and costly input. Use of quality seed increases yield from 20 to 40 per cent over the traditional seeds used by the farmers. In order to meet the growing food demand of the world. Many countries beginning of an intensive research programmed for crop improvement. Under these projects, the performance in yield potential, disease­ and pest resistance, and nutritional value of the newly developed varieties (including hybrids) was evaluated.

**Definition:**

The mating or crossing of two plants or lines of dissimilar genotype are known as hybridization. Hybrids seeds produced through cross pollination will have 'hybrid vigor' and can be used for only one crop.

Offspring of parents that differ in genetically determined traits. The parents may be of different species, genera, or (rarely) families. The term hybrid, therefore, has a wider application than the terms mongrel or crossbreed, which usually refer to animals or plants resulting from a cross between two races, breeds, strains, or varieties of the same species. There are many species hybrids in nature (in ducks, oaks, blackberries, etc.), and, although naturally occurring hybrids between two genera have been noted, most of these latter result from human intervention.

**History and Background:**

Scientific plant breeding dates back hardly more than 50 years. The role of pollination and fertilization in the process of reproduction was not widely appreciated even 100 years ago, and it was not until the early part of the 20th century that the laws of genetic inheritance were recognized and a beginning was made toward applying them to the improvement of plants. One of the major facts that have emerged during the short history of scientific breeding is that an enormous wealth of genetic [variability](ebcid:com.britannica.oec2.identifier.ArticleIdentifier?articleId=74851&library=EB&query=null&title=variability" \l "9074851.toc) exists in the plants of the world and that only a start has been made in tapping its potential.

The first application of modern scientific methods to plant reproduction is credited to Gregor Mendel in the mid-19th century (Sears, 1947). Up to then, farmers engaged in plant breeding in a less systematic or conscious manner, usually by exploiting chance mutations and natural selection processes.

Early 20th century studies, including De Vries and Correns (1900) on the inherited nature of corn endosperm texture, Shull and East (1908) on hybrid vigor arising from their experiments in corn breeding, and Jones (1918) on the commercial potential of higher yielding hybrid corn, led to major breakthroughs in plant breeding (Heisey,1999).

In 1961, the first maize hybrid was released for general cultivation, followed by hybrid varieties of sorghum, pearl millet, and non­hybrid high yielding varieties (HYVs) of rice and wheat. In 1971, the development of the first hybrid cotton was a landmark in the history of crop improvement in the country.

**Goal:**

The plant breeder usually has in mind an ideal plant that combines a maximum number of desirable characteristics. These characteristics may include resistance to diseases and insects; tolerance to heat and frost; appropriate size, shape, and time to maturity; and many other general and specific traits that contribute to improved adaptation to the environment, ease in growing and handling, greater yield, and better quality.

**Objectives and Targets:**

The main objectives of hybrid seeds will be to improve the productivity of crops. The following measures will be taken to achieve these objectives.

1. Enhance productivity of crops through development of new technologies, high yielding disease resistant varieties, scientific methods of farming and improved management practices.
2. Promote production and import of high-value seeds.
3. Promote import substitution by enhancing the production of valuable crops like oilseeds and tea.
4. Improve income of the small and medium level farmers by quality seeds.
5. Improve efficiency of agricultural inputs and ensure their timely availability to the farmers.
6. Strengthen agricultural institutions for research and extension and improve their linkages and coordination.

**Description of product:**

The description of the product is developed and manufacturing of **Hybrid Seeds**. Because the control of pests and diseases is an important factor in increasing the productivity of crops. Around 20-25 per cent of crop outputs are lost due to attack of insects and pests.

**Operational Performances:**

Hybridization allows breeders to enhance biological characteristics more predictably and more quickly than natural selection or chance mutations. The use of hybrids and other HYVs to achieve higher agricultural output and the acreage under hybrids is increasing every year. Breeders also protect their intellectual property by keeping knowledge of their hybrid varieties from being passed on to others.

From the perspective of the seed firm, hybridization had two commercial advantages.

**First**, simple examination of a hybrid seed does not reveal its lineage, thus offering companies proprietary control over the seeds they develop.

**Second**, the enhanced vigor of hybrid seed is not transmitted to its offspring, thereby requiring farmers to buy new seed every year to ensure continued vigor. Crops cultivated from seed saved from a hybrid crop grown in the previous year are typically less vibrant and significantly lower in yield.

**Impact on Rural Employment Opportunities:**

If hybrid technology spreads on a large scale specially in developing countries, it would contribute substantially not only to food security, but also to poverty elimination by generating employment in rural areas.

**Issues and challenges/ Constrains:**

Although the promoted the use of hybrids and other HYVs to achieve higher agricultural output and the acreage under hybrids is increasing every year, but not all farmers have accepted the new seeds. The opposition is not to the hybrid seeds as such but to the adverse impact they could have in terms of loss of biodiversity and loss of ability of seed saving, which forces farmers to buy new seed every year.

In some rejection cases is the performance of the seeds of private seed companies were not as good as they were expected.   
 Other rejection of hybrids by some farmers has also taken another form: the use of traditional seeds combined with the adoption of organic farming. These farmers have tried to show that traditional seeds can give similar yields as improved varieties.

Some farmers have organized themselves to prevent the spread of hybrid seeds. This reaction of the farmers might become a problem for the promoting hybrids for achieving higher agricultural growth.

**Industry / Productions Analysis:**

The development of hybrid seed had left seed production to seed companies for the practical reason that it is the most economical way to maintain appropriate inbred lines, and seed production can be isolated from the food production areas of open pollinating crops. But it had also prevented farmers from saving and replanting seeds, making it necessary to purchase seeds every season.

Seed industries in the developing countries are commonly expected to perform two quite different economic functions simultaneously: an equity function of delivering the types and quantities of seed required by different categories of users in a timely manner to appropriate locations at an acceptable price; and an efficiency function of fully recovering the fixed and variable costs of seed production and delivery. They concluded that for the small farmer seed market it is often impossible to fulfill both these functions simultaneously.

Private seed companies are commonly found to be reasonably efficient, but they are seldom engaged in operations which are not profitable, such as multiplication of improved varieties of open pollinated subsistence crops or the seed delivery to marginal areas with low density of demand. Equity goals are often embodied in public seed industries, but poor efficiency often makes these organizations not fulfill their equity goals, despite substantial subsidies.

**Future Outlook:**

Successful development and large-scale dissemination of hybrid technology will have a major impact on the seed industry. Countries with a high labor­ land ratio and a high proportion of irrigated area, such as India, Pakistan, Bangladesh, Indonesia, the Philippines, Sri Lanka and Vietnam, are likely to have the greatest potential demand for hybrid seeds. Effective management of hybrid seeds appears to be very important for maximizing the hybrid seeds potential market. The technology has contributed not only to food security, but it also increases the productivity of the crops. It has also helped indirectly to protect the environment.

**Suggestions:**

Developing countries need to increase in collaboration agreements between domestic and foreign companies, aiming at the import of technology and parental material. Private and Govt. institutions direct their research activities specifically to hybrid pearl millet and cotton, followed by sunflower seeds and others high value crops. Also to ensure that sufficient hybrid seeds are available in local markets.

Usually, the private sector does not play much of a role in the early stage of technology development. At this stage, the public sector has to play a leading role.

For countries lacking suitable seed industry infrastructure, a self-sustaining seed production system can be tried, so that farmers can produce hybrid seeds for their own use rather than for sale to others.

**Conclusion:**

Hybrid seeds provide many advantages to the farmers. Increase the income, yield, Current research activities indicate that the spread of these hybrid seeds would increase in the near future.

Hybrid technology contributed significantly towards increased food security and environmental protection, and higher incomes for seed producers. It has also created additional rural employment opportunities.

**Annexure / table / Graphs:**

**Reference:**

[www.google.com](http://www.google.com)

Agriculture University Faisalabad

NIBGE Institute Faisalabad

**SDPI Research and News Bulletin**

**Economic Research Services \USDA**