

Punjab is an Agricultural state. Considerable varietal changes have taken place since the introduction of green revolution in the state, for example, reports indicate that in 1907 the area was surveyed for commonly used wheat varieties (it being the major crop of the region). Twenty five varieties were recorded out of which eighteen belonged to broad wheat (*Triticum aestivum*), three to compactum group (*Triticum aestivum* var. *compactum*) and four to Wadnak group (*Triticum durum*). The varieties commonly grown in the field consisted of mixture of various types of grain. In certain areas both, bearded & beardless wheats were grown together and were given commercial names like, Sharbati, Darra, Safaid Pissi, Lal Pissi, Ghandausi, Lal Kanak, etc. Bansi, Kathia, Khandwa & Malwi were common durum wheats. Varieties such as Pakwani were preferred for making sweet dishes, Dawatkhani for parties and Sharbati for soft chapattis. Similarly several locally adapted varieties of rice, maize, cotton, pulses, oil seeds, vegetables and fruits were also grown, but the species and varietal diversity has decreased with introduction of high yielding varieties of wheat and rice, as well as, selective marketing support to more crops. The area under wheat and paddy has increased by 1.5 & 10 times, respectively from 1960 to 2006. Now 100 per cent area under wheat and rice is under High Yielding Varieties which have a high demand for inputs like water, chemical fertilizers and pesticides. The traditional varieties are hard to find. Protecting our Agricultural biodiversity is of prime importance if we wish to cut down the use of chemical fertilizers and pesticides and adopt sustainable agriculture.

(Adapted from Jerath *et.al.*, 2002. Strategy & Action Plan for Conservation of Biodiversity in Punjab)

DO YOU KNOW

- * The crops that grow in our gardens and fields are very different from their wild ancestors. As humans have domesticated them, they have bred different varieties, either knowingly or unknowingly, to adapt to changing environments, and to satisfy different tastes, sights and aroma; adding to our biodiversity.
- * Plants that are now quite different from one another may have come from the same wild relative, like, cabbage, kale, cauliflower, broccoli, kohlrabi & Brussel sprouts are descendents of wild cabbage.
- * Among the early domesticated wheat were Einkorn (*Triticum monococcum*)⁽¹⁾, once grown in Turkey and Europe and Emmer (*T. dicoccum*), once grown in the Near East, Africa and Europe⁽²⁾. Today's bread wheat (*T.aestivum*)⁽³⁾ is a hybrid between Emmer and a species of closely-related goat grass (*Aegilops*)⁽⁴⁾.



Source : Genetic Diversity & Food Crops Outreach Biodiversity Series, USA

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Biological Diversity in the fields

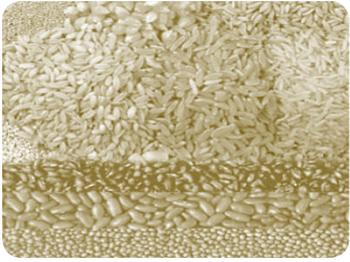


Punjab Biodiversity Board

Punjab State Council for Science & Technology, Chandigarh

United Nations Educational, Scientific & Cultural Organization, New Delhi

Agricultural biodiversity is the diversity of life that is needed to feed and nourish our people. It includes:



Edible plants & crops including land races, traditional varieties, cultivars & hybrids. Also horticultural & silvi cultural trees.

Soil organisms that are vital to maintain soil fertility and nutrient recycling. Also insects, bacteria & fungi that act as pests or their predators.



Farm animals, like livestock, poultry and fish.

Wild plants and animals in their natural habitat which have medicinal or economic value or which provide services like pollination, seed dispersal, etc.



AGRODIVERSITY RELIES UPON THE DIVERSITY OF KNOWLEDGE & PRACTICES THAT ARE USED TO MANAGE LIVING RESOURCES FOR FOOD PRODUCTION

Scientists believe that the place where a particular plant first grew is the most likely place to find its greatest variety and its wild relatives

Humans began to grow food crops about 10,000 years ago. Since then they took their crops along with them wherever they traveled, and in the process, dispersed the seeds & tubers to other areas. For some crops these areas developed as secondary centres of diversity. For example, maize is believed to originally belong to Mexico but valuable diversity can also be found in Asia and Africa.



Vavilov's Eight Centers of Crop Origin

Source : www.hort.purdue.edu

Vavilov's Centres of Origin of Species

1.	China	Millet, peach, soyabean, orange, tea
2.	India	Cucumber, eggplant, mango, rice
2a.	Indo China & S.E. Asia	Banana, coconut, mango, rice, sugar cane, yarn
3.	Central Asia (N.India, Afghanistan & Turkmenistan)	Apple, apricot, carrot. grape, onion
4.	Near East (Iraq, etc)	Barley, fig, lentil, pea, rye, wheat
5.	Mediterranean	Beets, cabbage, celery, grape, oats
6.	Ethiopia & African region	Coffee, millet, oil palm, sorghum, teff, yam
7.	S.Mexico & middle America	Maize, common beans, squash, pepper, avocado
8.	NE South America Bolivia, Peru & Isle of Chile	Tomato, potato, cacao, cassava, groundnut, pineapple

Nikolai Vavilov was a Russian Scientist who systematically collected and studied genetic diversity of the world's major food crops. He headed the Lenin All Union Academy of Agricultural Sciences (renamed Vavilov All Union Institute of Plant Industry) in St. Petersburg (Leningrad) from 1920 to 1940. He published his 'Studies on Origin of Cultivated Plants' in 1926 and identified eight areas as centres from which major crops were domesticated. Later he modified his theory to include 'Secondary centres of diversity'.