

LECTURE 4: Origin of cultivated plants

For thousands of years, farming communities have grown wild plants, adapted some of them, and carried out selection in cultivated plants. By focusing on specific traits to improve plant performance and by growing crops in different and specific agro-ecosystems, gradually the combined human and natural selection pressure has altered the characteristics of plants to adapt to newly evolving farming environment. This process called **crop domestication** has provided the basis of the major food crops as we know them today.

Centre of diversity

Crop domestication started about 8,000 years ago. Places where the first crops originally developed are known as primary Centres of Diversity. These centres usually show a rich reservoir of both wild and cultivated plants belonging to the same or closely related species. The spread of Agriculture in the past to other parts of the world by early colonists and traders resulted in a further increase in the diversity of plant genetic resources not only in the primary centres of origin of specific crops but in additional areas as well creating Secondary Centres of diversity.

Important of plant genetic diversity

Genetic diversity remains extremely important not only to individual farmers and farming communities but also to Scientists and Breeding institutions and humanity as a whole.

1 The availability of diversity enables farmers to grow crops under a range of varying conditions and adverse environments.

a Better manage uncertainties

b Spread their risks of production

c Sustain live hood in marginal production areas. N.B such production areas are often exposed to stresses such as infertility, pest, diseases and drought.

2. Diversity assists both farmers and breeders to select and breed for better crops and varieties to satisfy present and future demands in production and consumer preferences.

3 Diversity continues to satisfy the diverse demand by households and consumers in different cultural settings, e.g for taste, appearance, cooking quality and by-products and to suit niche markets as source for fixed food, fibre and other uses.

Unfortunately, the diversity is threatened like all bio-diversity. The decrease in diversity in farming systems is called **genetic erosion**. Genetic erosion nowadays is considered one of the main threats to sustainable crop production and food security, especially in the mid- and long term.

In summary.

1. Primary Centre: This is the centre where maximum diversity occurs.
2. Secondary Centre: It develops from types that migrated from the primary centre. For example primary centre of maize is Mexico but secondary centre for waxy type maize is China

PRIMARY CENTRES	CROPS
1. China	Rice, Soybean, Orages, Chinese, Cabbage
2. India/Southeast Asia	Rice, Cucumber, Eggplant, Pigeon Pea, Sugar cane, Banana, Jute
3. Central Asia	Pea, Carrot, Sesame, Safflower, Onion, Garlic, Apple
4. Near East(Turkey/tran)	Wheat, Barley, Rye, Pea, Flex, Lentil, Chicken pea
5. Mediterranean	Drum wheat, Cabbage, Sugar beet, Olive,

	Grape, Almond
6. Sub-saharan Africa	Pearl millet, Sorghum, Cowpea, Coffee, Okra
7. Mexico/Cental America	Maize, Melon, Tomatoes, Pumpkin, Cocoa, Avocado
8. Andes, Brazil, Paragnay	Pepper, Potato, Rubber, Cassava, Sweat potato.

Examples of Secondary Centres of genetic diversity are:

- a. The horn of Africa (Ethiopia) is a major secondary centre of diversity for barley, wheat and Sorghum
- b. Tomato was carried to Europe and subsequently to other parts of the world by Spanish traders some 400 years ago.
- c. Bananas originates from southeast Asia and spread in ancient times to Africa to create a rich secondary centre of diversity.
- d. Southeast Asia is considered a secondary centre of sweat potato diversity, a crop that originated in South America.

Sub-Saharn Africa can be regarded a centre of diversity of cassava, a crop that originated from the tropical Amazon region of South America.