

Ethiopia

- Includes Abyssinia, Eritrea, and part of Somaliland.
- 38 species listed; rich in wheat and barley.
 - Grains and Legumes: **Abyssinian hard wheat**, **barley**, **sorghum**, **pearl millet**, **African millet**, **cowpea**.
 - Miscellaneous: **sesame**, **castor bean**, **coffee**, **okra**.

Central American or South Mexican Center

- Includes southern sections of Mexico, Guatemala, Honduras and Costa Rica.
 - Grains and Legumes: **maize**, **common bean**, **jack bean**, **grain amaranth**
 - Melon Plants: **malabar gourd**, **winter pumpkin**.
 - Fiber Plants: **upland cotton**, **bourbon cotton**, **henequen** (sisal)
 - Miscellaneous: **sweetpotato**, **pepper**, **papaya**, **guava**, **cashew**, **wild black cherry**, **cherry tomato**, **cacao**.

USA centre

No major cultivated crop origins

- relies on introduced crops
- many minor fruit and nut crops: **American grapes** and **plums**, **pecan**, **chestnut**, **hickory nut**, **hazelnut**, **black walnut**, **persimmon**, **blueberry**, **raspberry**, **blackberry**, and **cranberry**.
- Additional crops: **sunflower** ,**Jerusalem artichoke**
- some grasses
- many ornamentals
- Timber tree species

South American Center

62 plants listed.

Three sub centers

i) **Peru, Ecuador, Bolivia Center:**

- Comprised mainly of the high mountainous areas

Root Tubers: Andean cultivated potato species.

Grains and Legumes: starchy maize, lima bean, common bean

Vegetable Crops: tomato, ground cherry, pumpkin, pepper

Fiber Plants: Egyptian cotton

Fruit and Miscellaneous: cocoa, guava, quinine tree, tobacco

ii) **Chile Center** (Island near the coast of southern Chile)

Common potato, Chilean strawberry

iii) **Brazil-Paraguay Center**

peanut, rubber tree, pineapple, Brazil nut, cashew.

Limitations of Vavilov's views

The expansion of our understanding on cultivated plants pointed certain limitations on Vavilov's views. These views require some modifications,

1. Vavilov considered the region with greatest genetic diversity of a species as the centre of origin of that species. But now, many such species are known whose centres of origin and genetic diversity are different. For example, Maize and Tomato
2. The centres of origin of cultivated plants as per Vavilov are limited to the mountains and small hills in tropical and sub-

tropical regions. But recent evidences also suggest plains as the centres of origin of many cultivated plants.

3. Today several crops are known whose centres of origin are different from the ones suggested by Vavilov. Moreover there is more than one centre of origin. Also, the origin of many of the species cannot be traced due to lack of sufficient evidence.
4. According to Vavilov primary centre is marked by high frequency of dominant alleles towards the centre and recessive towards the periphery. But this view is not acceptable as per the latest knowledge.

Primary centres of diversity	
Primary centres	Secondary centres
Regions of vast genetic diversity of crop plants. These are original homes of the crop plants which are generally uncultivated areas like, mountains, hills, river valleys, forests, etc.	Vavilov suggested that valuable forms of crop plants are found far away from their primary area of origin which he called secondary centres of origin or diversity. These are generally the cultivated areas.

Reference: https://hort.purdue.edu/newcrop/Hort_306/text/lec05.pdf