

## V The 3<sup>rd</sup> Agricultural Revolution

\* Mid 20<sup>th</sup> Century (Due to Science, Research, and Tech.)

### A The Green Revolution

1. Advancement in plant biology
  - a) High Yield, disease resistant, fast growing varieties of grain.
  - b) Rice, Corn, Wheat
2. Farmers could double crop (grow more than one crop in a year)
3. Inc use of fertilizers + pesticides
4. Hybrids were created: breeding together two plants with desirable characteristics
  - a) 1960: New strain of rice (Indonesian + Taiwan) larger + denser
5. Norman Borlaug (microbiologist)
  - a) Turned Mexico from wheat importing to a wheat surplus

## 6. GMOs (Genetically Modified Organism)

a) Change the DNA of a seed

b) 1970s, widely used after 1990

c) Inc. Yield, resist disease, resist weed killer, pesticides

## 7. Machinery

a) Tractors, Tillers, Broadcast seeders, grain carts.

## B. Positive Impacts of the Green Revolution

\* food production ↑, Reduced hunger, lower death rates, population ↑

### 1. Higher Yields

a) Prevention of Famines

b) Able to get more food out of the same amount of land

c) Most successful in Latin America, South Asia, E. Asia, SE Asia.

### 2. Money for Research - Business

a) Lots of investment in public + private sectors.

b) Universities undertook research on seed hybridization

c) Helped hungry people in LDCs, and made money for MDCs

### 3. Food Prices

a) Fell due to an increased supply

i) Eased the economic stress of hunger and famine on governments and economic systems in LDCs

b) 2005 prices began rising

## C. Negative Consequences of the Green Revolution

1. Use of Hybrids, chemical fertilizers, pesticides, and fossil fuel equipment will harm the environment

2. Large amounts of soil erosion.

3. Intense irrigation drained the land of its natural nutrients  
i. Had to use more + more fertilizers.  
ii. Chemical runoff in streams + rivers.

#### D. Green Revolution's Impact on Gender Roles

1. Women often excluded from learning new farming methods + machines (LDCs)
2. Marginalized women's Roles (Before GR Women were working on farms)

#### E. Economic Changes

1. Costs lots of money for these new tech, hybrids, etc
2. Costs passed on to farmers → passed on to consumers
3. When profits fall there is less incentive to invest more in that field.
4. Labor markets in LDCs changed: Rural → Urban

#### F. Green Revolution's Poor Success in Africa

- \* Place where this is needed the most it didn't work well
1. Greater diversity of climate + soils so it was much more expensive to develop fertilizers
  2. Africa has areas of extremely harsh environmental factors (Insects, Plants, Viruses)
  3. Huge amount of land area, w/o quality transportation infrastructure, costs to improve it are extremely high.
  4. The staple African crops: sorghum, millet, cowpeas, yams, cowpeas, peanuts were not always included in research seed hybridization programs