Improving post-harvest mechanization to reduce COVID-19 impact

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Background

- The regional blockade and traffic restrictions, prolonged delivery period, unsalable and deteriorated produce.
  - Promote the upgrading of cold chain logistics and storage technology of agricultural products
- The economy slowed down and the purchasing power of consumers declined, farmers' income decreased.
  - Improve the technology of post-harvest mechanical loss reduction, such as drying and storage
  - Improve post-harvest commercialization processing technologies such as grading and packaging, provide more quality and cheap agricultural products

Post-harvest of crops, fruits and vegetables is an important way to make profits.
Problems of agricultural products in post-harvest:

- High loss during post-harvest
- Loss reduction link is drying and storage process
- Storage loss exceeds 5%
- Low mechanization level
- Large quality loss and wasted energy

Post-harvest losses:

- Developing countries: 3%
- The developed countries: 10%

Mechanization level:

- Developing countries: 95%
- The developed countries: 10%

Post-harvest losses:

- Developing countries: 5%
- The developed countries: 30%

Processing proportion:

- Developing countries: 10%
- The developed countries: 80%
Progress of post-harvest of crops, fruits and vegetables

- **harvest**
- **drying**
- **hulling**
- **storage**

- ✓ moisture and temperature
- ✓ quality changing
- ✓ Shell
- ✓ go to miscellaneous
- ✓ storage modes
- ✓ storage processes
- ✓ storage facilities
- ✓ quality changing

- • commercialization
- • derogation

- ✓ reduce damage
- ✓ value-added
- ✓ remove moisture
- ✓ extend storage time

- ✓ transportation by refrigerated truck
- ✓ use cold storage to keep fresh
Technical equipment for post-harvest of crops in China

<table>
<thead>
<tr>
<th>Continuous drying dryer</th>
<th>Batch cycle dryer</th>
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<tbody>
<tr>
<td>Suitable for corn covering a large area</td>
<td>Low temperature drying drying quality is high</td>
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Sales of crops dryers:
- squeeze and rub
- pneumatic separation

Protection requirement, fuel and electricity will be used mainly:
- Tall warehouses
- Large storage capacity
- Low grain stacking lines
- Complete supporting measures
- Relatively widely used

Coal is banned now.

The drying heat source of Jiangsu in 2017:
- Coal is banned now.
Case Ⅰ: Regional crops drying and processing center

✓ A regional drying center was established in Xieyi village, Feilong Township, Jianyang City.
✓ 4 sets of crops drying machines. Drying capacity 40 tons per day, storage capacity of 500 tons.
✓ Affordable crop drying service for the whole village of 3,000 acres and the nearby farmers.
✓ Compared with the traditional drying, it can save 160 yuan RMB per ton crops.
✓ The center received investment from enterprises and villagers jointly, with certain subsidies from the government. Farmers can get extra dividends.
mainly cleaning methods such as friction, water flow and air bubbles

using of physical characteristics for sorting technology has been industrialized

in addition to the traditional drying room, heat pump, microwave and vacuum technology has also been mature

film and vacuum technologies have been widely used for packaging

mechanical refrigeration is the main method of vegetable storage except ventilation storage

transportation uses mechanical refrigeration technology
Regional fruits and vegetables processing centers were established in Lingchuan County, Guilin City, Guangxi Zhuang Autonomous Region.

103 storages with storage volume of 37000 cubic meters and capacity of over 7000 tons, 20 drying facilities with processing capacity of 30 tons per day.

During the epidemic, 7000 tons of agricultural products have been stored, one of the cooperatives can dry 3000 kg of mushroom per day.

Adopt the operation mode of "company + base + farmer household" and "cooperative + farmer household".
Policy Suggestion

- **Model**
  Establish regional drying and processing center for agricultural product to provide services for nearby farmers and large growers.

- **Technology**
  Improve drying and storage equipments for crops, storage and transportation equipments for fruits and vegetables.

- **Policy**
  Strengthen the center infrastructure construction, formulate preferential policies and innovate organizational cooperation mechanisms.
Thank you

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