Asian and Pacific Workshop on Whole-Process Mechanization of Potato Production

Experimental Study on Potato Harvester with Integrated Type of Vibrated Digging and Separating

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Experimental Study on the new integrated vibratory digging-separating potato harvester

Content:
1. Study on the potato planting mode and the distribution of potato in the field
2. The condition and problems of current potato harvester in the market
3. The structure and working principle of the new integrated vibratory digging-separating potato harvester
4. The effect of the new potato harvester in the field
5. Conclusion
Study on the potato planting mode and the distribution of potato in the field

- Focus on one season ridge planting mode in north China
Study on the potato planting mode and the distribution of potato in the field

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Ridge
Spacing: 80-100cm
Height: 25-30cm

Distribution of potato
Depth: 15-25cm
Width: 45-60cm
The condition and problems of current potato harvesters in the market
The condition and problems of current potato harvesters in the market

- Main problems:
  - 1. Large amount of soil digging, high resistance, high energy consumption
  - 2. Long time friction between potato and separation chain harms the potato
  - 3. Complicated structure of machinery, long length, inflexible motion, and no hanging mode
  - 4. The separation chain is easy to damage in rocky field
The structure and working principle of the new vibratory integrated digging-separating potato harvester

1. **Issues addressed:**

- Studied the working principle of digging shovel, solved the problem of high resistance force,
- Lowered the resistance and energy consumption of the harvester components
- Developed the technology of potato-soil separation and potato vine separation
- Solved the issues of breaking skin and increased the quality of potato harvesting
The structure and working principle of the new vibratory integrated digging-separating potato harvester

2. The structure and working principle of whole machine
The structure and working principle of the new vibratory integrated digging-separating potato harvester

- The features:
  - The vibratory obtrapezoid digging shovel, greatly reduced the amount of soil digging and tillage resistance up to 30%
  - The combination of potato-soil separation grating and the vibratory shovel forms the no-sieve separation device, simplifies the separation mechanism, reduces the potato motion distance and time on the separating sieve, and reduces the rate of injury.
The effect of the new potato harvester in the field
The effect of the new potato harvester in the field

- **Main technical indexes:**
  - Power: 47.8 kw
  - Working rows: 4
  - Loss rate: 2.0%
  - Obvious rate: 98%
  - Leakage rate: 0.13%
  - Damage rate: 0.06%
  - Producing efficiency: 0.55 hm²/h
The new integrated vibratory digging-separating potato harvester solved the key problems, such as high resistance in digging, low efficiency in potato-soil separation, damaged skin and so on. It integrates seedling processing, digging, removing soil and collection in potato harvesting. It has simple structure, light weight, low working resistance force, high production efficiency and low damage rate.
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The End

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