

China's solutions for crop residue burning

-----Mechanized technology and equipment for comprehensive utilization of straw



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□ The attention of society to the ban on straw burning

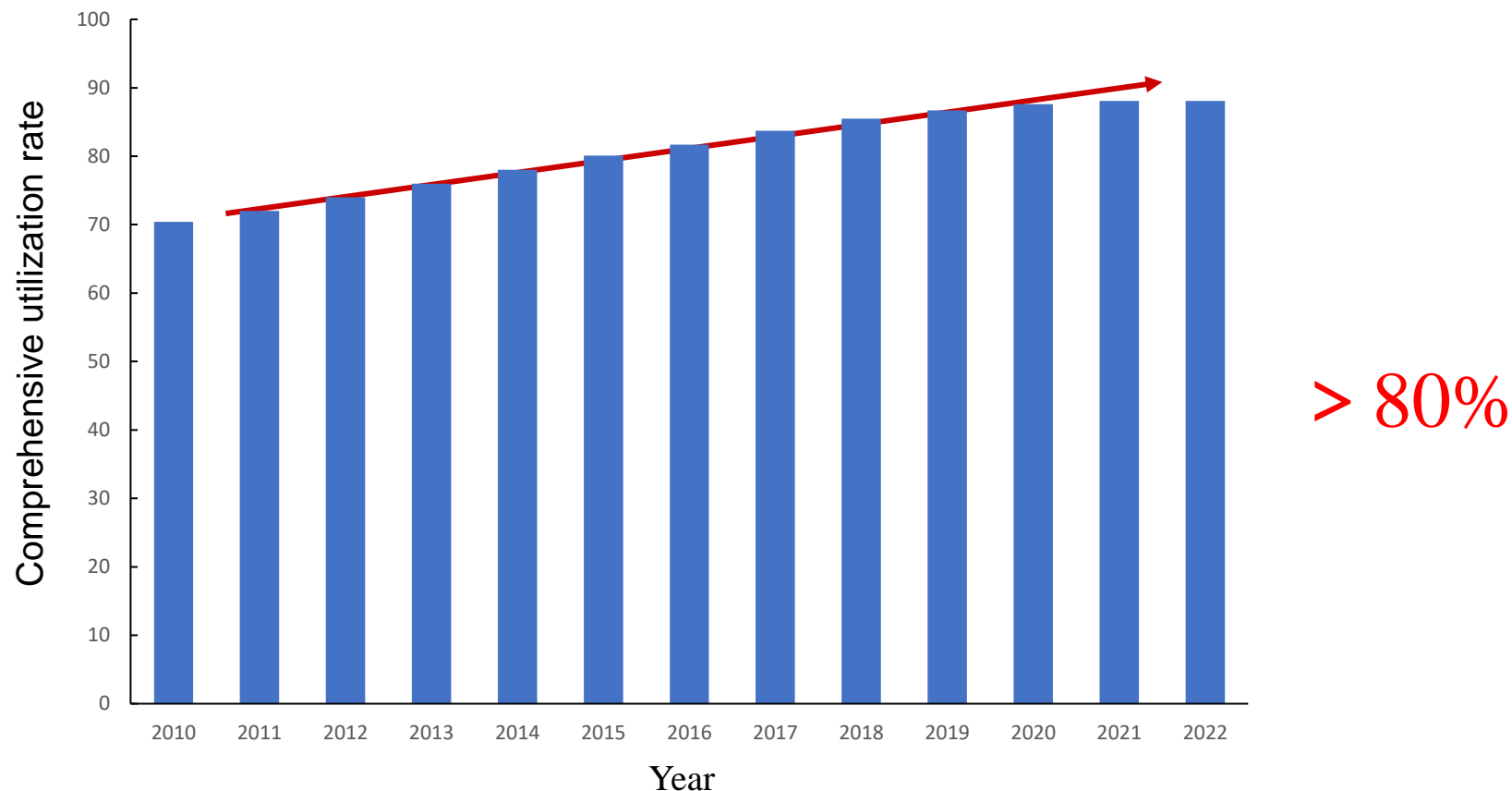
Management measures for the prohibition of straw burning and comprehensive utilization

秸秆禁烧和综合利用管理办法

(1999年4月16日，国家环境保护总局、农业部、财政部、铁道部、交通部和中国民航总局发布，环发〔1999〕98号)

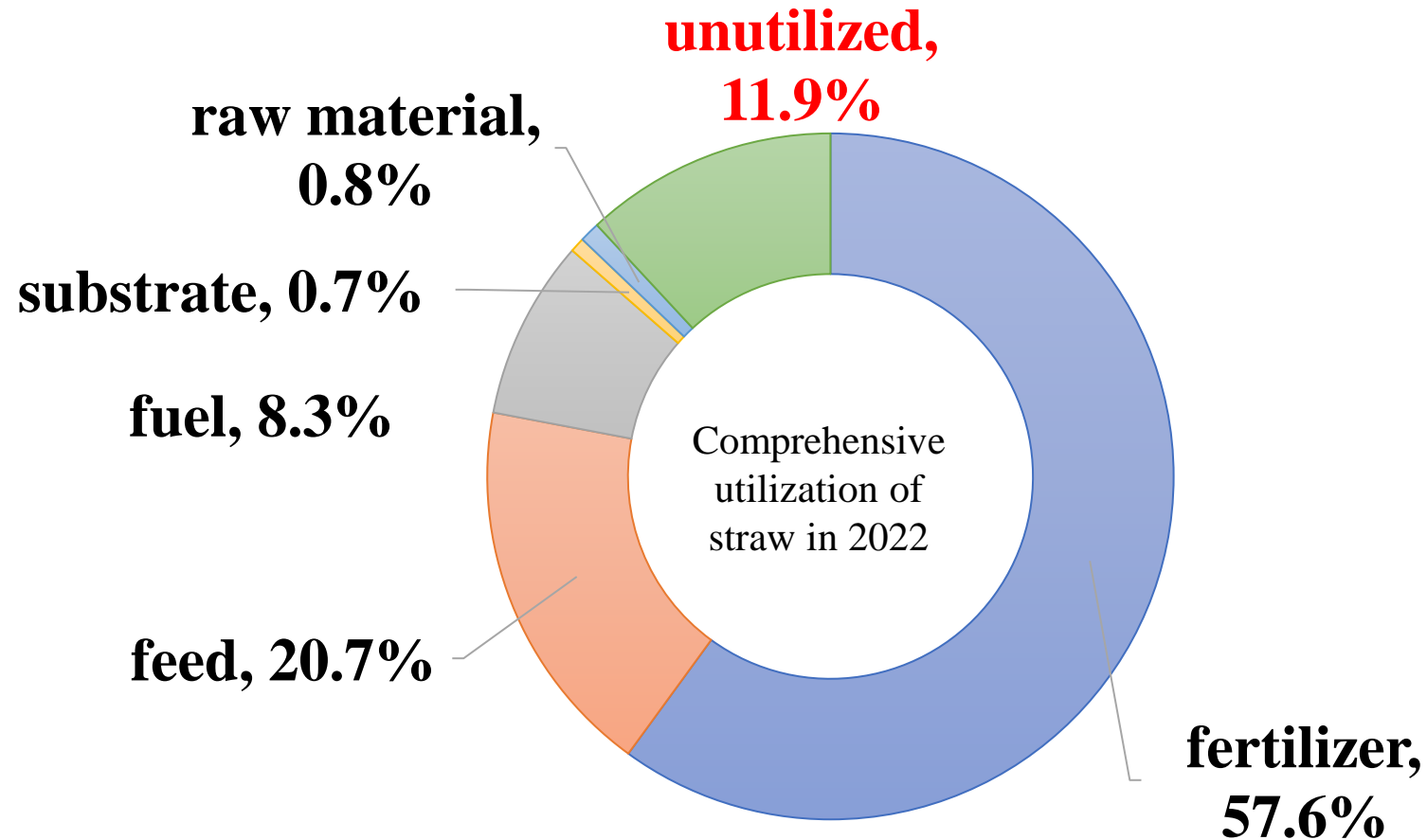


The comprehensive utilization rate of straw is steadily increasing



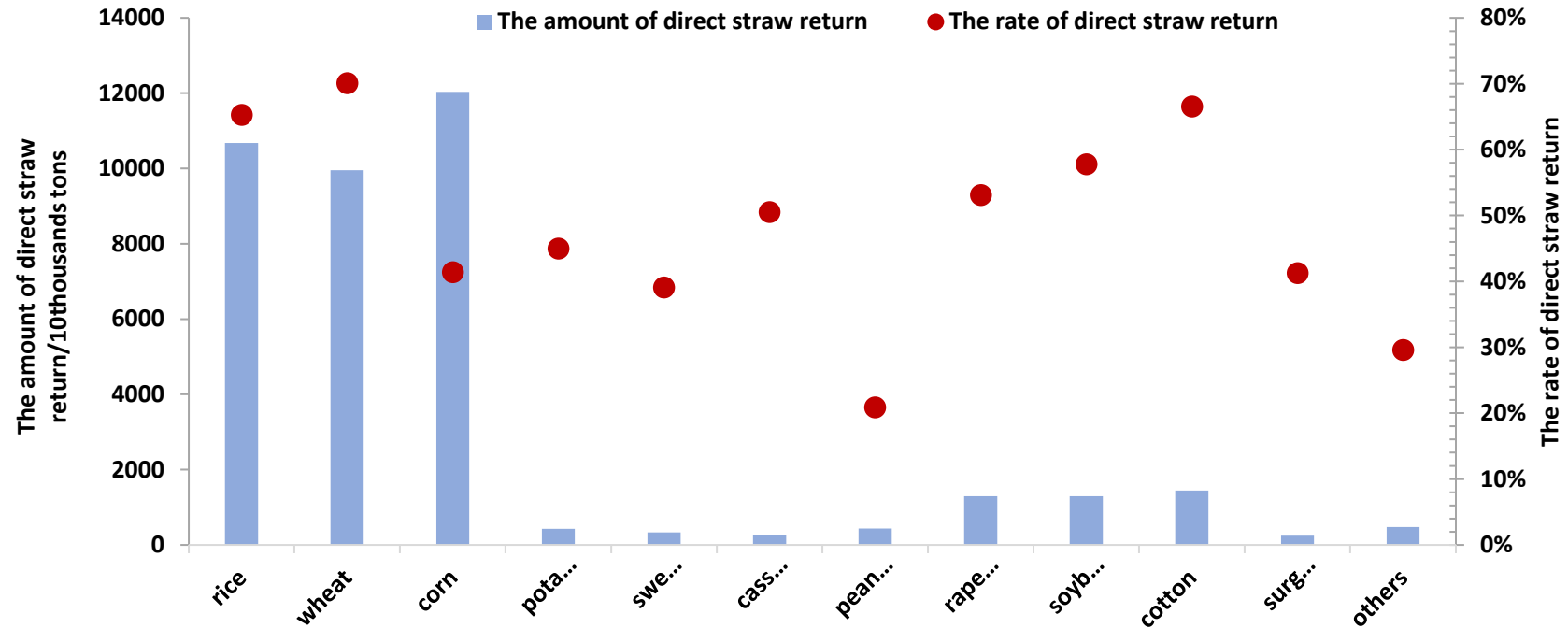
- ◆ In 2022, the **national straw production** reached **865 million** tons, with a collectable amount of **73,100** tons and a **utilization amount** of **644 million** tons. The **comprehensive utilization rate** reached **88.1%**, an increase of 3.4 percentage points compared to 2018

The comprehensive utilization rate of straw is steadily increasing



- ◆ The **utilization rates** for **fertilizer, feed, fuel, substrate and raw material** were **57.6%, 20.7%, 8.3%, 0.7%, and 0.8%**, respectively. The pattern of "agricultural use as the main focus, with comprehensive utilization in five aspects" has basically been formed

Returning straw to the fields is the most common method of straw utilization



- ◆ In 2022, the **nationwide direct straw** return to fields reached **382 million** tons, accounting for **52.3%** of the collectible straw. Among them, the **amounts of corn, rice, and wheat straw** returned to fields were 126 million tons, 120 million tons, and 100 million tons respectively, accounting for **42.6%, 66.5%, and 73.7%** of the collectible amounts
- ◆ Returning straw to the fields improves soil fertility, enhances soil structure, and consolidates and increases grain production capacity

Mechanized technology and equipment



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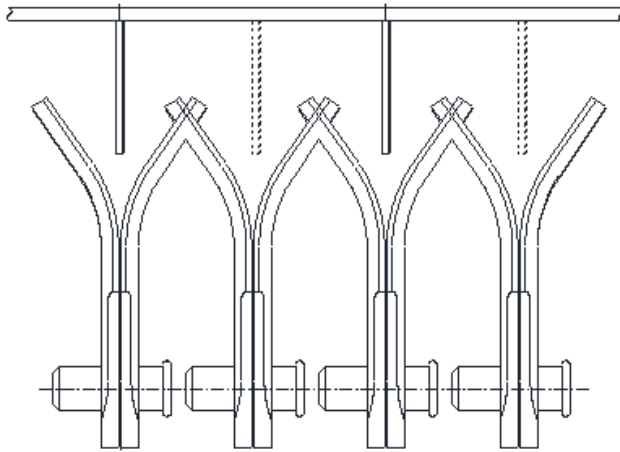
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1. Straw chopping and covering

粉碎覆盖

Fine chopping of straw

① Supported chopping



Dynamic and fixed blade crushing

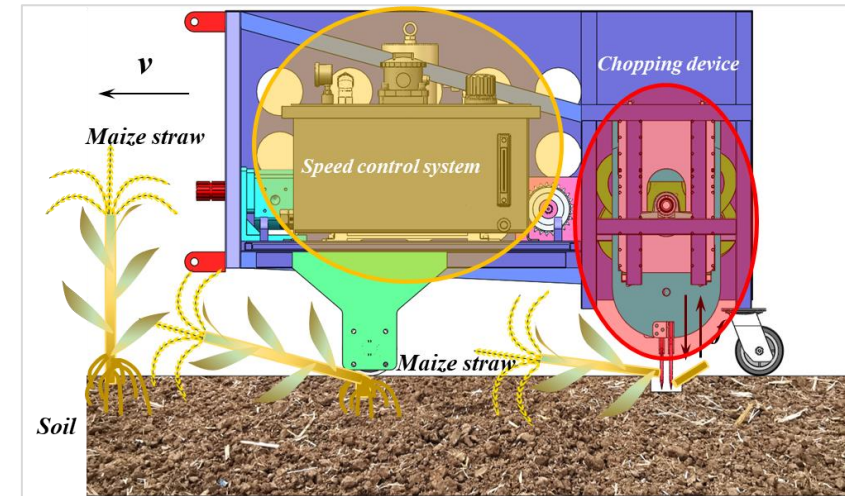
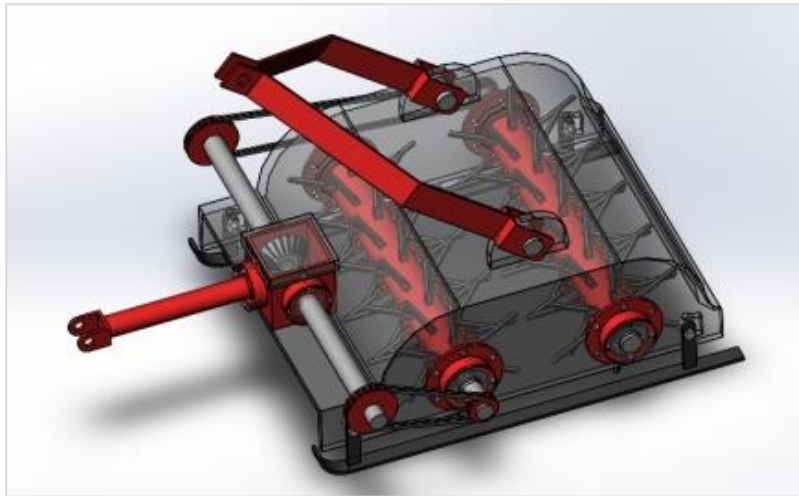


Surface-supported cutting

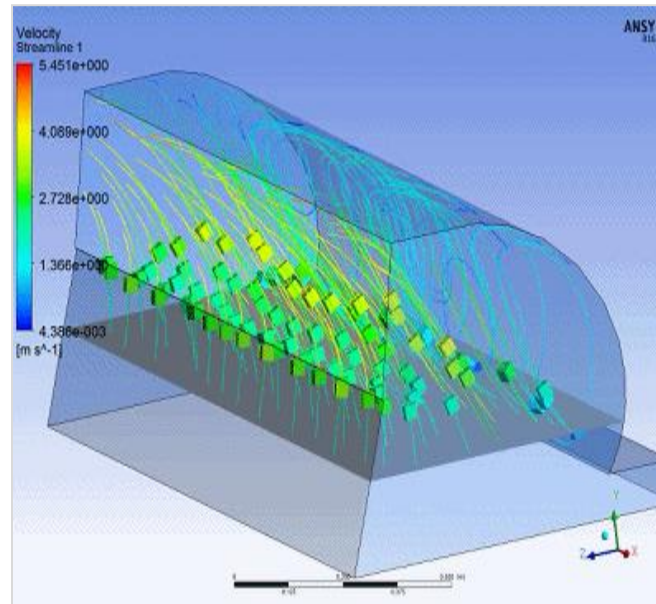
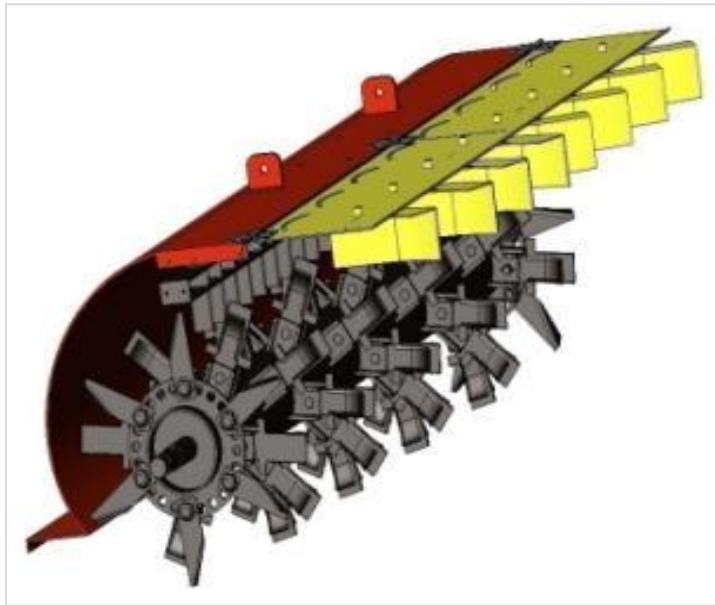
- Cutting straw with fixed blades or surface support

1. Straw chopping and covering 粉碎覆盖

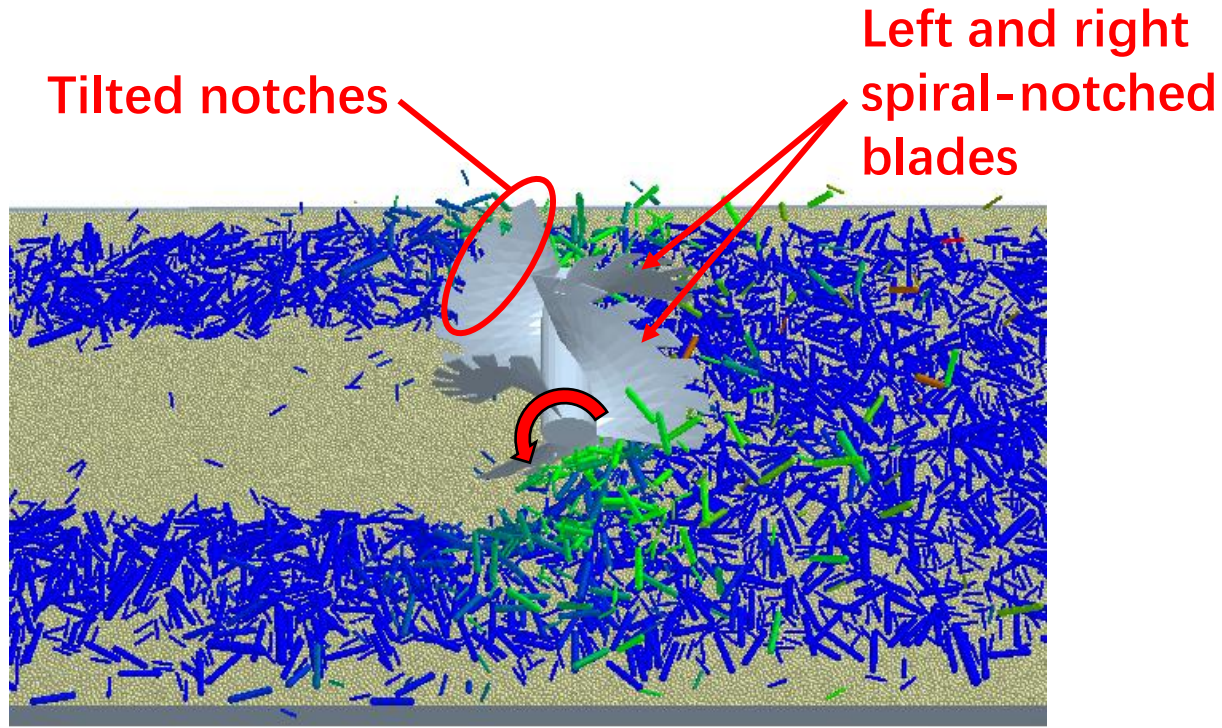
Fine chopping of straw



Straw evenly throwing

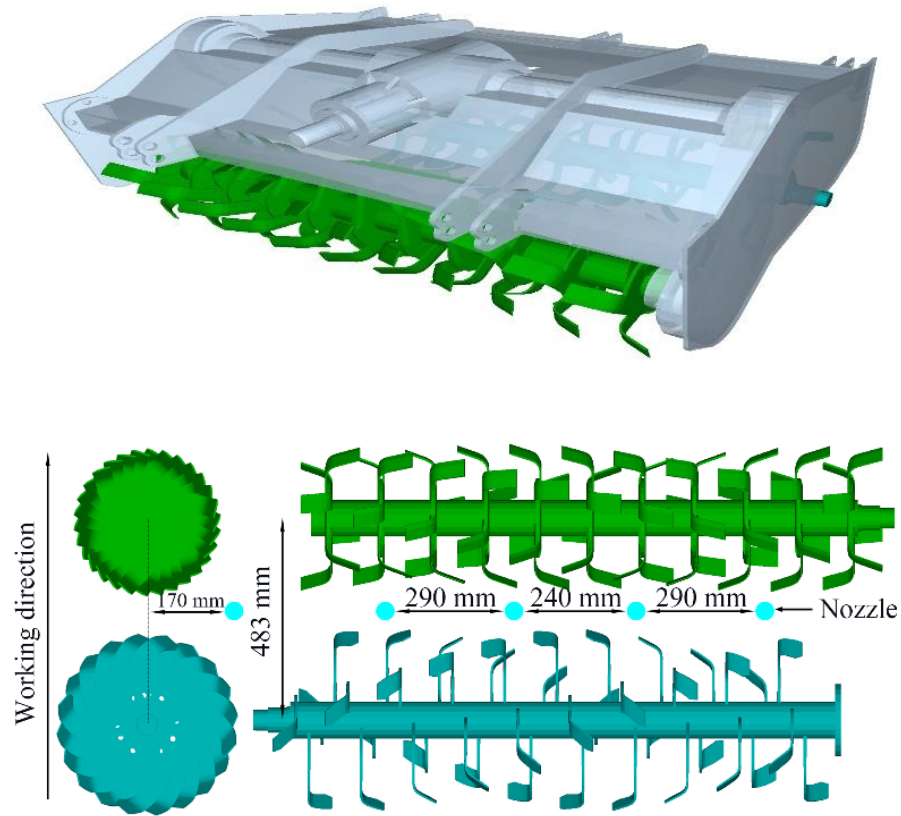


Spiral pushing straw row-sorting



- The left and right spiral-notched blades rotate forward, pushing the straw steadily to both sides of the seeding belt;
- The tilted notches allow the soil acted upon by the machine to flow back into the seeding belt to minimize soil loss.

Double-axis crushing and returning of straw

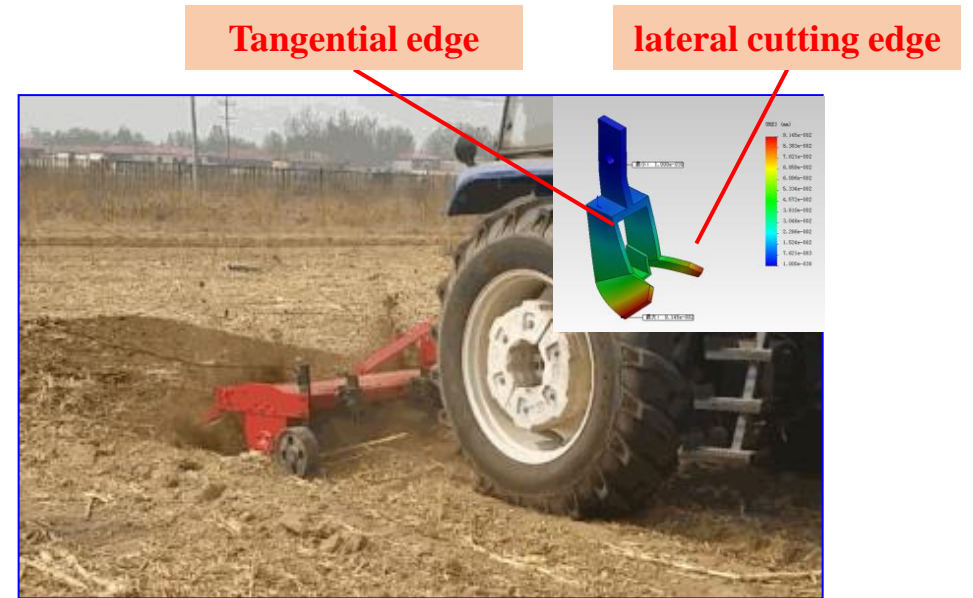
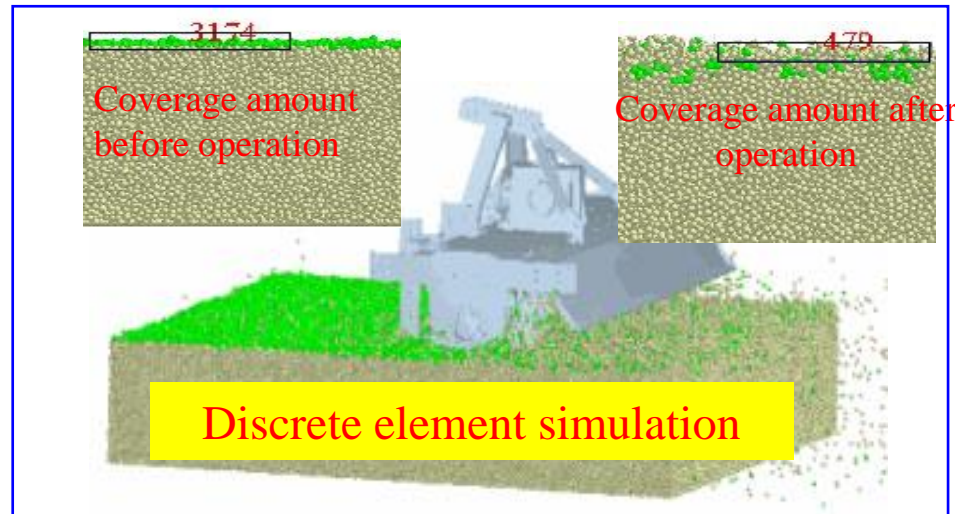


- The rear rotary blades mix the root residue destroyed by the front blades to enhance the mixing performance
- The amendment was added to the churned soil from nozzles between the shafts to maximize mixing uniformity

Straw mixing in field 还田机

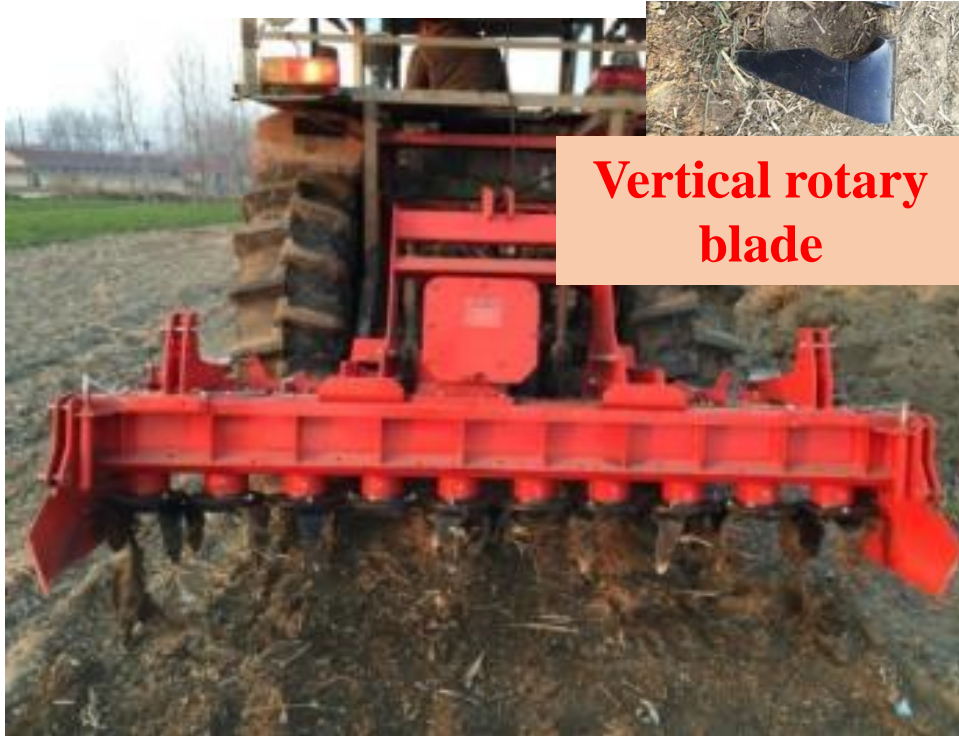
Straw mixed buried in shallow layer

① Double-wing symmetrical rotary cutting shallow burial



- By utilizing the cutting action of the tangential edge of the double-wing symmetrical rotary cutting blade and the sliding action of the lateral cutting edge, it achieves the shredding of straw and the uniform mixing with the soil

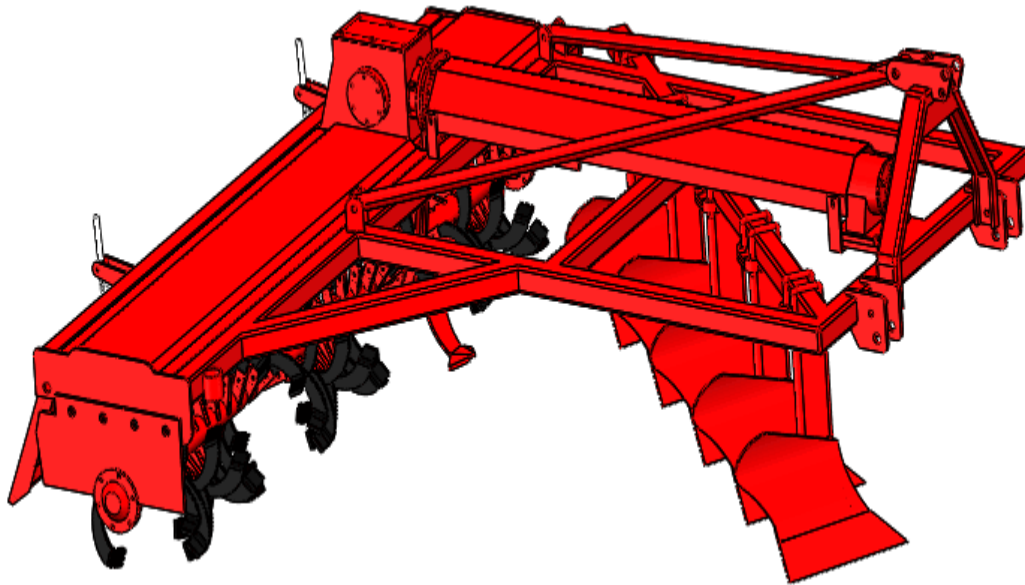
Vertical mixing shallow burial



- By using a narrow vertical straight blade to stir the surface layer (0~10cm) of the soil, crop residues are broken up, achieving shallow burial of straw and soil

Straw burial 秸秆掩埋

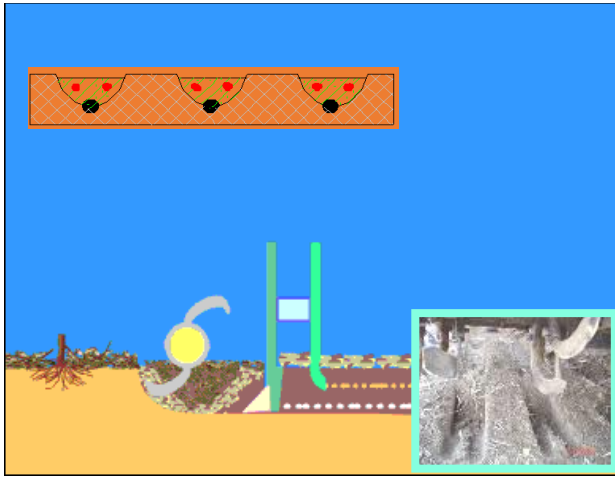
① Multiple operation with plow burial



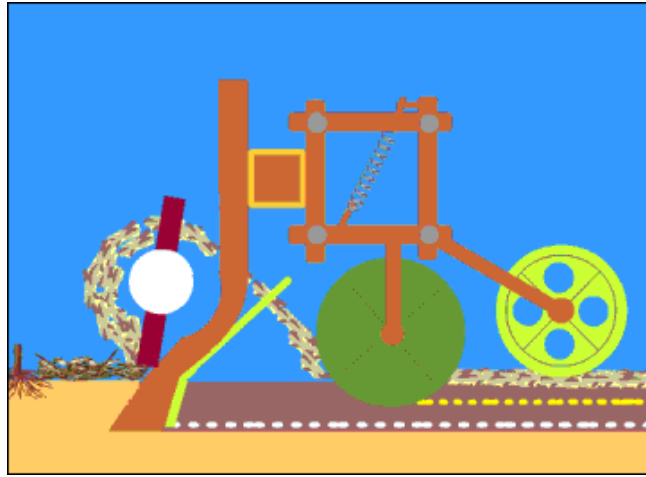
- The **moldboard plow** is used to overturn and bury the straw, while the horizontal shallow rotary tillage is used to prepare the soil surface, **reducing** the amount of straw mixed in the topsoil and lowering the difficulty of sowing

Straw clearing and strip seedbed preparing

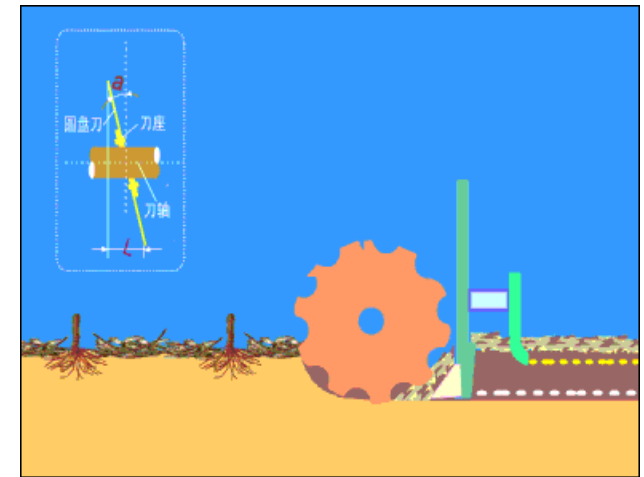
Strip tillage technology for seedbed cleaning



Strip-till



Strip-chop



Oblique-driven disc

- By utilizing strip-till, strip-chop, and oblique-driven discs, the clearing of straw on the seedbed is achieved to ensure the quality of sowing

Seedbed cleaning equipment

**Maize
no or
reduced
tillage
seeders**



**Wheat
no or
reduced
tillage
seeders**



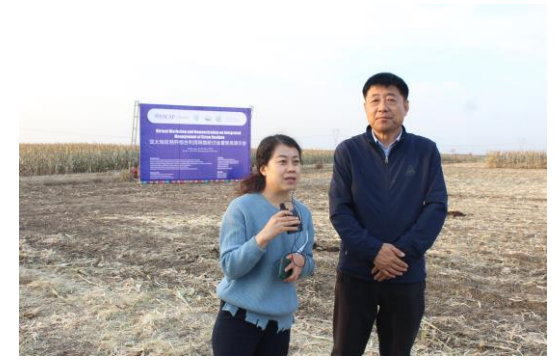
Straw removal from field



Round baler



Square baler



Good Practices in South-South & Triangular Cooperation in LDCs

March 16, 2022 Good Practices Thematic Series & Special Editions, Publications

This publication on “Good Practices in South-South and Triangular Cooperation in LDCs: From the Istanbul Programme of Action to Achieving Sustainable and Resilient Development” showcases 80 important examples of effective action. Responding to the call in the Buenos Aires outcome document of the Second High-level United Nations Conference on South-South Cooperation for the United Nations Development System to share good practices and experiences from the South, especially with LDCs,⁴ this report has been jointly developed by the United Nations Office for South-South Cooperation (UNOSSC), the United Nations Capital Development Fund (UNCDF) and the United Nations Office of the High Representative for LDCs, LLDCs and SIDS (UN-OHRLLS), in partnership with the Qatar Fund for Development (QFFD).

Three transitions stand out from the good practices presented in this publication, which also reflect some of the main challenges and opportunities faced by the LDCs.



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Thank you



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