

Rice production and Rice Straw Management in Thailand

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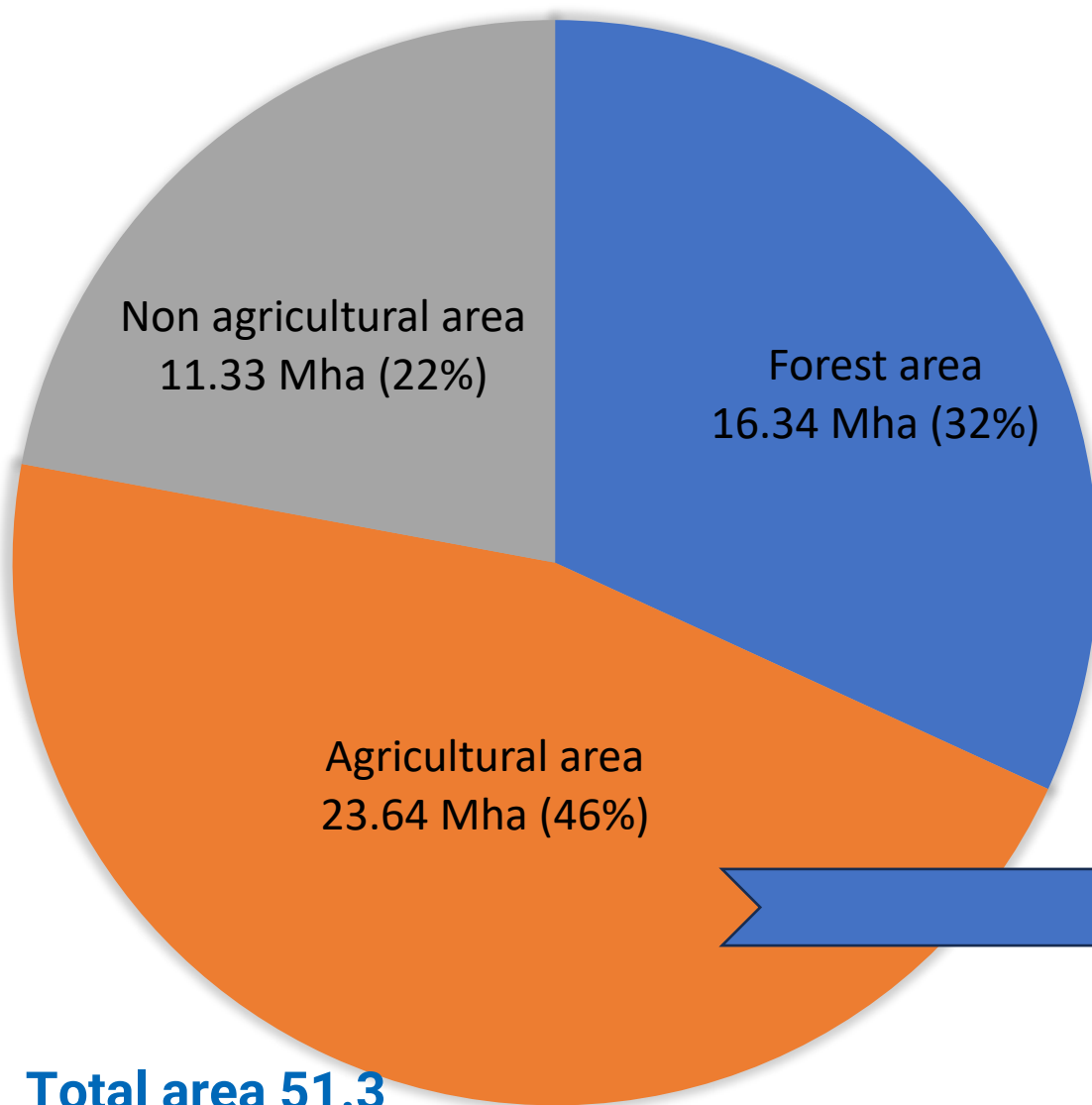


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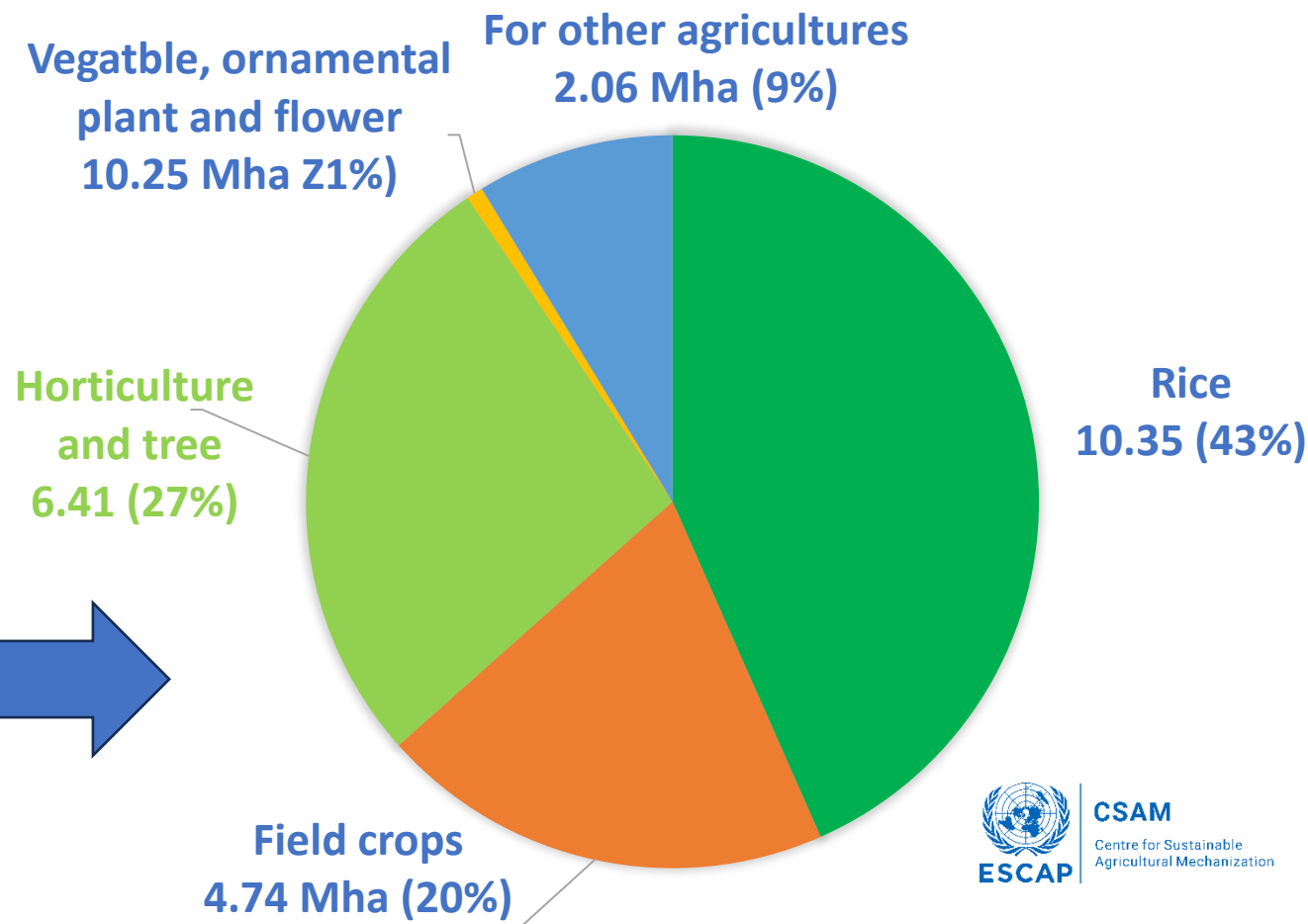
Land used of Thailand



Total area 51.3 Mha

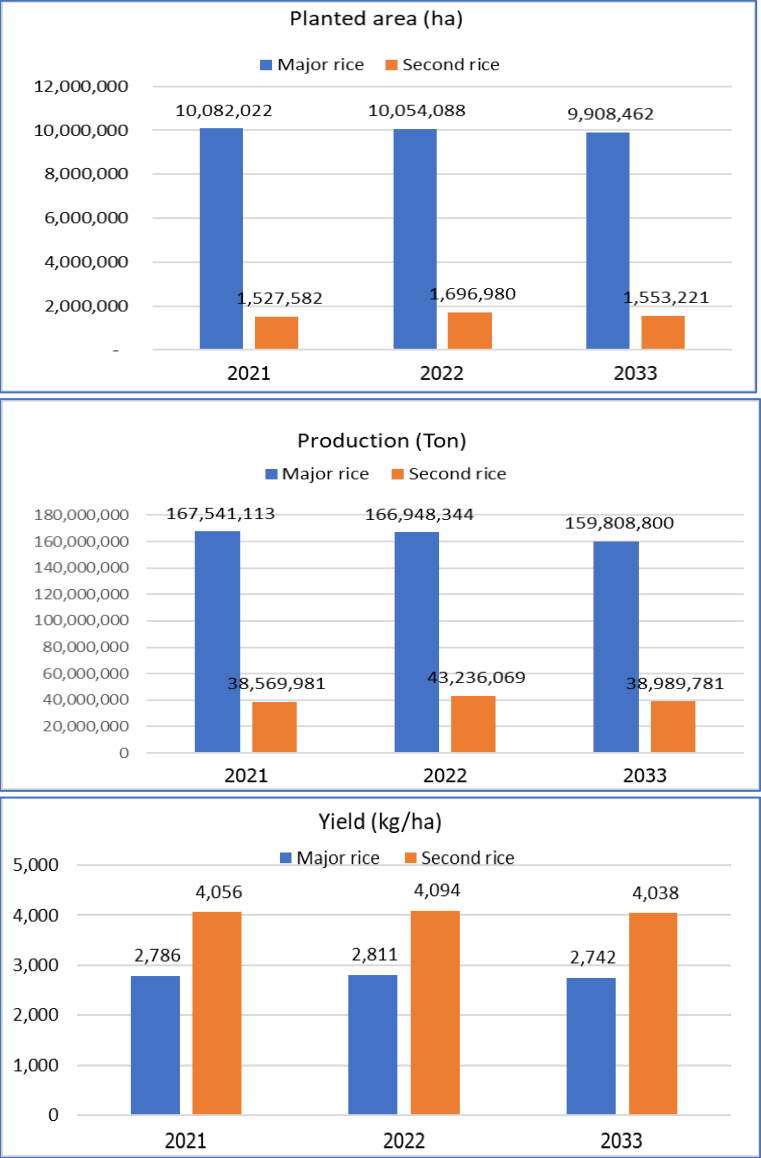
Agricultural area 23.64 Mha

- Irrigated area 5.64 Mha (23.45%)
- Non-irrigated area 18.0 Mha (76.15%)

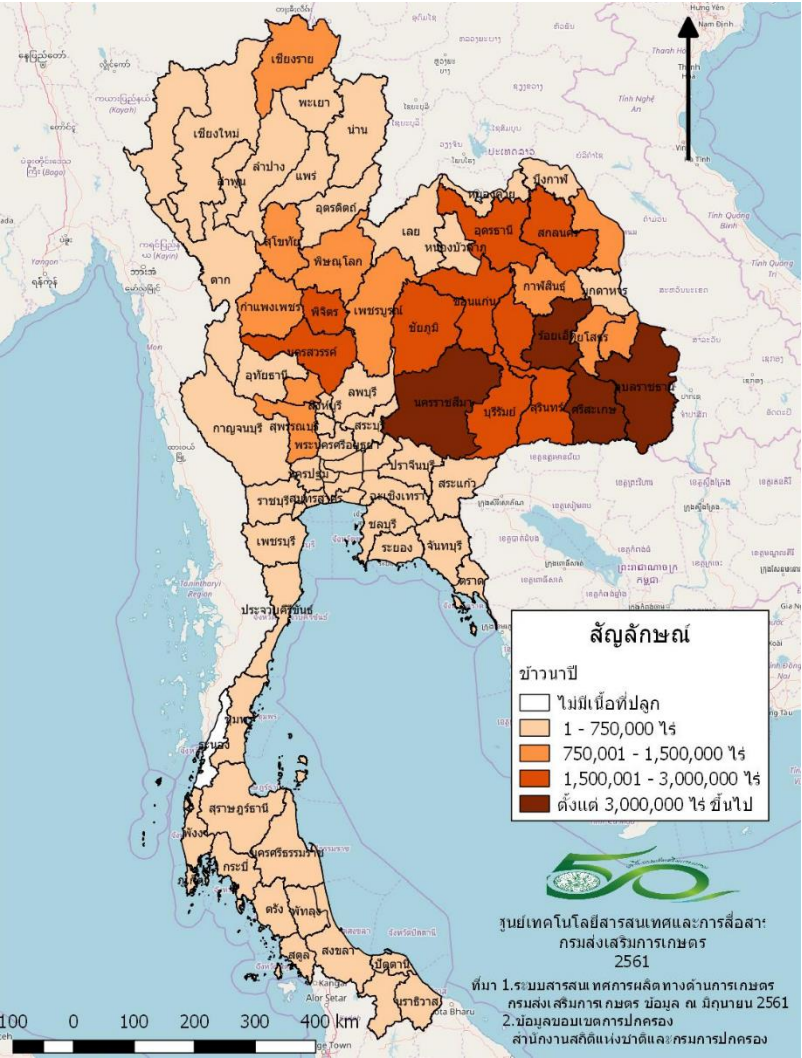


Status of rice production and straw burning

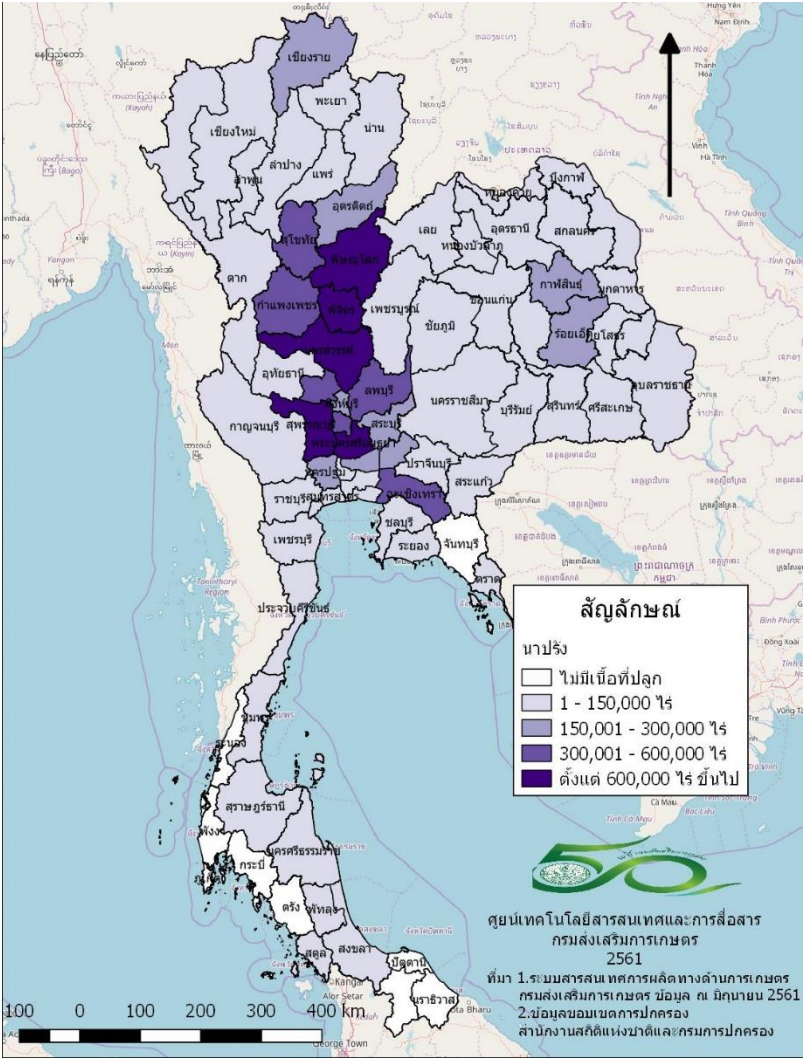
Rice production



Major rice area



Second rice area



Rice straw and stubble management

1. Left over in the field

2. Burn

- Mostly in irrigated area



3. Plowing and left in the soil for fertilizer

- Mostly for major rice production in rainfed area



4. Collecting for storage places and utilization users/customers

- Bio energy
- livestock feed
- Pulp and paper industrial
- Organic fertilizer
- Mushroom
- Mulching for agriculture
- Decoration purpose
- cement block
- smart wood
- Etc.





Mechanization for rice straw management

3. Plowing and left in the soil



4. Rice straw collection for storage and utilization

Pull type rice straw baler: Square baler



Pull type rice straw baler: Roll Baler Machine



Collecting and carrying in the field



Thai made rice straw baler (Pull type)

- Track transmission
- Available in wet land
- Less labor requirement



Thai made rice straw baler (track and combine type)



**Combining of baling and carrying in the field
as well as available used in the wet field**



Thai made rice straw baler machine





Transport to storage place or customers



2.1 Challenge and constraints in addressing straw burning

- Huge amount of straw
- High crop intensity in irrigated rice area
- Small farm holding (land, capital and labor) low chance to archive machinery for straw management
- Rental land farmer unsure for available continue rent and get benefit of improve soil fertility from crop residue
- How to decrease cost for straw management
- Increase perception to famer for benefit of un-burn and impact of burn rice straw
- Increase long perspective view for the impact of burn rice straw to communities and country
- Create collaboration of farmers, government organization and private companies
- Continues and sustainable of un-burn rice straw management

2.2 Constraints

1. combines harvesting cause strip of straw over stubble, difficult for soil tillage
2. Quantity of straw and stubble quite high
3. Hiring rate for plowing is higher than straw is burned
4. Lack of high performance machinery shredding rice straw and stubble
5. the most effect is in seedbed land preparation especially in land leveling
6. Effect to growth and production yield
 - $>7,500$ kg/ha significantly decrease of production yield
 - $>6,250$ kg/ha just effect to growth rate in young state
 - $< 5,000$ kg/ha non effect to growth and production yield



Constraints (con.)

7. Rice straw burning problem is belong to rice production in irrigated area
8. Irrigate rice area need high crop intensity
9. Rice stubble unavailable of machinery for shredding or clear and
10. Both rice straw and stubble is decomposes slowly
11. Obvious result of un-burn to soil fertility take long time while farmer think not benefit with additional investment
12. Limit number of straw baler service providers
13. Bulky or low density of square/roll baler result to rather high for logistic cost
14. Labor shortage for rice straw collection

Constraints (con.)

- 15. Law and local regulation for control burning is non effective in some area because most regulator are stakeholder and belong to social aspect
- 16. Demand consumption of rice straw is still limit
- 17. Utilization of rice straw for other goods and products is still limit.
- 18. Lack of machinery for rice straw management in some activities

3. Good practice in addressing in straw burning, through mechanization

3.1 Collaboration of government organizations, farmer, local community administrative, private companies to continue promote un-burn and plowing after harvesting.



- Important policy of the government
- Minister of MOAC is the leader to drive the policy

-3.2 Growing nunn hemp/madras hemp after plowing rice residue and plowing again for increase organic fertilizer



-3.3 “Zero Burn Project” with the collaboration of Various organizations

- Non-government agencies (Thai Chamber of Commerce, Thailand Environment Institute Foundation, BAAC)
- Government organization (Various ministries, department, agencies)
- Private companies, Ex.
 - KUBOTA supply machinery, knowledge via KUBOTA(Agri) Solutions and award
 - SCG buy to use as bioenergy for cement production
- Famer and community enterprise



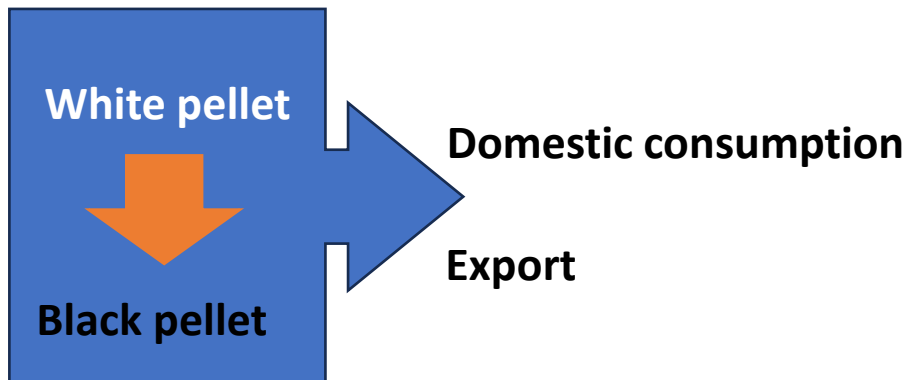


Pelleting to bio energy

- Increase density
- Reduction cost for transportation
- Value added
- Still in factory



How to use in the field or community enterprise?



4. Recommendations and suggestions

Country level

- Enhance the dissemination and perception to the benefit and negative impact of straw burning
- conduct the pilot project about positive impact
- Increase utilization of rice straw and boot up the related existing business
- Combining use of mechanical and bio microorganism for shorting decompose time
- **Increase machinery management**
 - Machinery sharing like machinery ring (MR) of German
 - Develop platform and matching among service provider and farmer
- R&D or import appropriate for missing machinery
- Manage for all crop residue that cause pollution not just only rice
- Change second crop to legume crop with no tillage

Regional level


- Learn and share knowledges and experience among countries
- Enhance as important issue
- Create perception impact of burn for the region not only country
- Manage for all crop residue that cause pollution not just only rice

Thank you

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