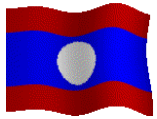


Regional Workshop on Integrated Straw Management in Asia and the Pacific, 19-20 June, 2024, Qingdao, China.

Practice Rice straw Management In Lao PDR.



Lao Representatives:

Mr. Vilaysak XAYASITH- Deputy Director of Division

M: +856 20 5559 8993, Email xvilay@gmail.com

Mr. Bouavonh Biachampa Deputy Head of Agricultural Land
Management Section

M:+856 202248 7575, Email:

Mr. Daophone PHETKHAMPENG Deputy head of Dept

M: +856 2054704629, Email: dphetkhampheng@gmail.com



ESCAP

CSAM

Centre for Sustainable
Agricultural Mechanization

Outline of Presentation

Lao PDR Landscape

Characteristics of rice and rice straw in Laos

Overview of rice straw management option

Rice straw residue practice management in Laos

Conclusions and Recommendations

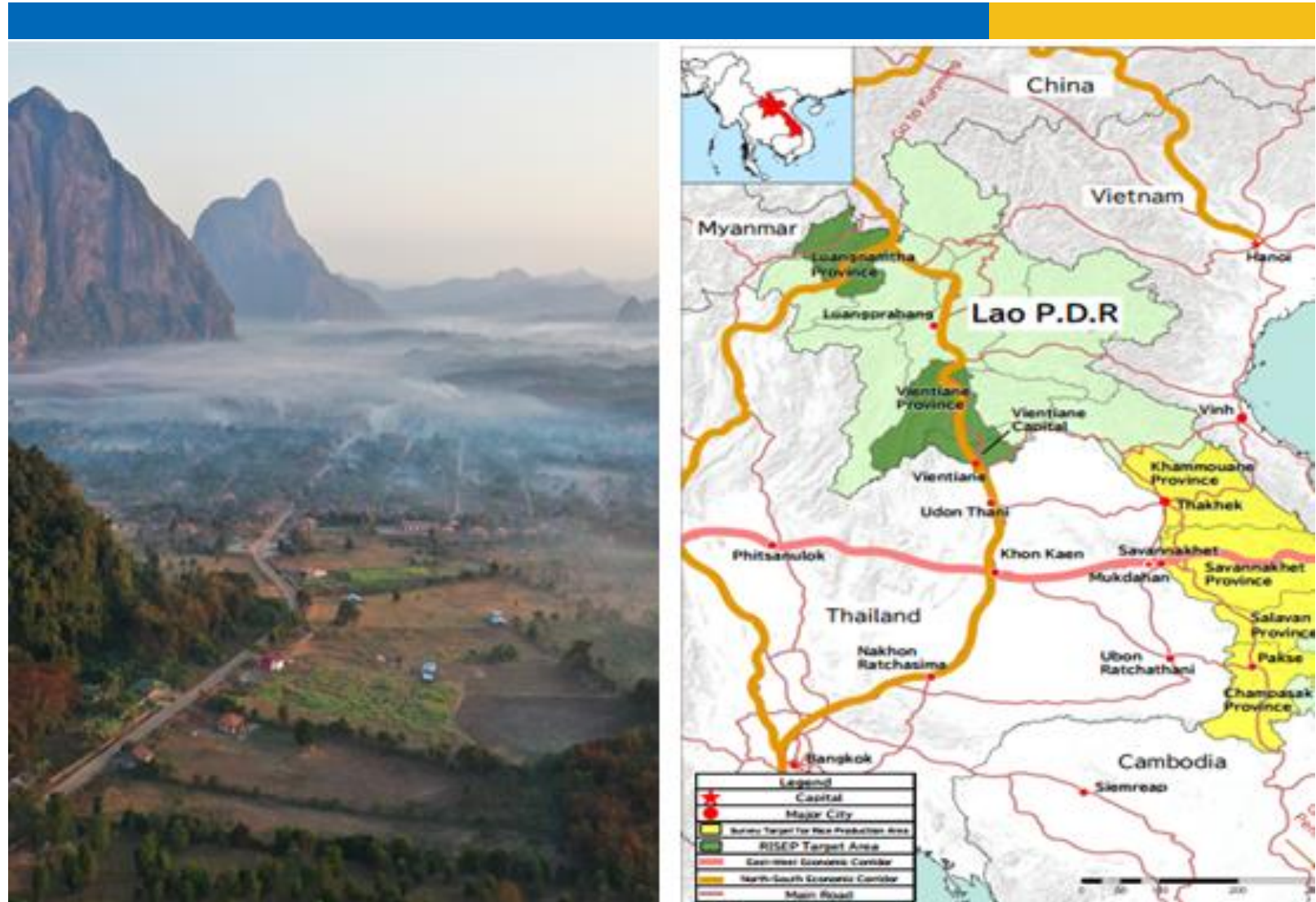
Laos is a country in and the only landlocked

Lao PDR Landscape

- Country Area: 236,800 km²
- Population: 7.5 million in 2022
- **Mountainous: 70%,(3 Parts, Southern, Central, Northern)**

Major economy:

- ❖ **Agriculture, Forest,**
- ❖ **Hydro-electric,**
- ❖ **Mining and Services**



Characteristics of rice and rice straw in Laos

Rice production amount by Province in Laos

Table 1. shows rice production by province in 2022. The total rice production in Laos was about 3.5 million tons, of which 83.6% is produced in paddy fields in the rainy season. **Dry-season rice** production in paddy fields was 10.9%, while upland rice production in the rainy season was only 5.5%. The main rice production in Laos is in the paddy fields in the **rainy season**.

Province	Total		Lowland Rainfed		Dry season		Upland	
	Production (ton)	Percentage (%)	Harvested Area (ha)	Production (ton)	Harvested Area (ha)	Production (ton)	Harvested Area (ha)	Production (ton)
Phongsaly	51,670	1.5	8,211	35,822	48	211	8,719	15,637
Luangnamtha	58,123	1.7	9,610	40,364	640	2,859	8,847	14,900
Oudomxay	83,458	2.4	14,779	60,215	564	2,439	9,752	20,804
Bokeo	72,417	2.1	13,052	55,286	709	3,168	7,240	13,963
Luangprabang	103,739	3.0	13,181	54,864	1,811	7,845	26,959	41,030
Huaphanh	103,123	2.9	13,554	64,020	1,658	7,745	14,699	31,358
Xayabury	192,254	5.5	35,574	157,864	2,262	10,292	11,839	24,098
Northern Total	664,784	19.0	107,961	468,435	7,692	34,559	88,055	161,790
Vientiane. C	297,928	8.5	51,921	235,862	14,074	62,066	0	0
Xiengkhuang	82,928	2.4	16,329	70,151	161	727	7,430	12,050
Vientiane	267,168	7.6	54,547	229,145	8,030	35,623	1,600	2,400
Borikhamxay	143,595	4.1	35,438	134,749	1,699	6,625	1,189	2,221
Khammuane	278,659	7.9	70,494	234,271	12,112	44,209	112	179
Savannakhet	798,140	22.8	161,679	685,519	30,602	112,621	0	0
Xaysombbuon	36,963	1.1	7,868	27,588	110	405	3,431	8,970
Central Total	1,905,381	54.3	398,276	1,617,285	66,788	262,276	13,762	25,820
Salavan	391,625	11.2	75,776	342,741	13,740	48,884	0	0
Sekong	35,886	1.0	6,800	29,240	794	3,446	1,720	3,200
Champasack	428,339	12.2	117,238	399,185	6,650	29,154	0	0
Attapeu	80,797	2.3	22,471	75,614	529	1,863	1,677	3,320
Southern Total	936,647	26.7	222,285	846,780	21,713	83,347	3,397	6,520
G.Total	3,506,812	100.0	728,522	2,932,500	96,193	380,182	105,214	194,130

Table1. Rice Production Amount by Province

Characteristics of rice and rice straw rice in Laos (Cont.)

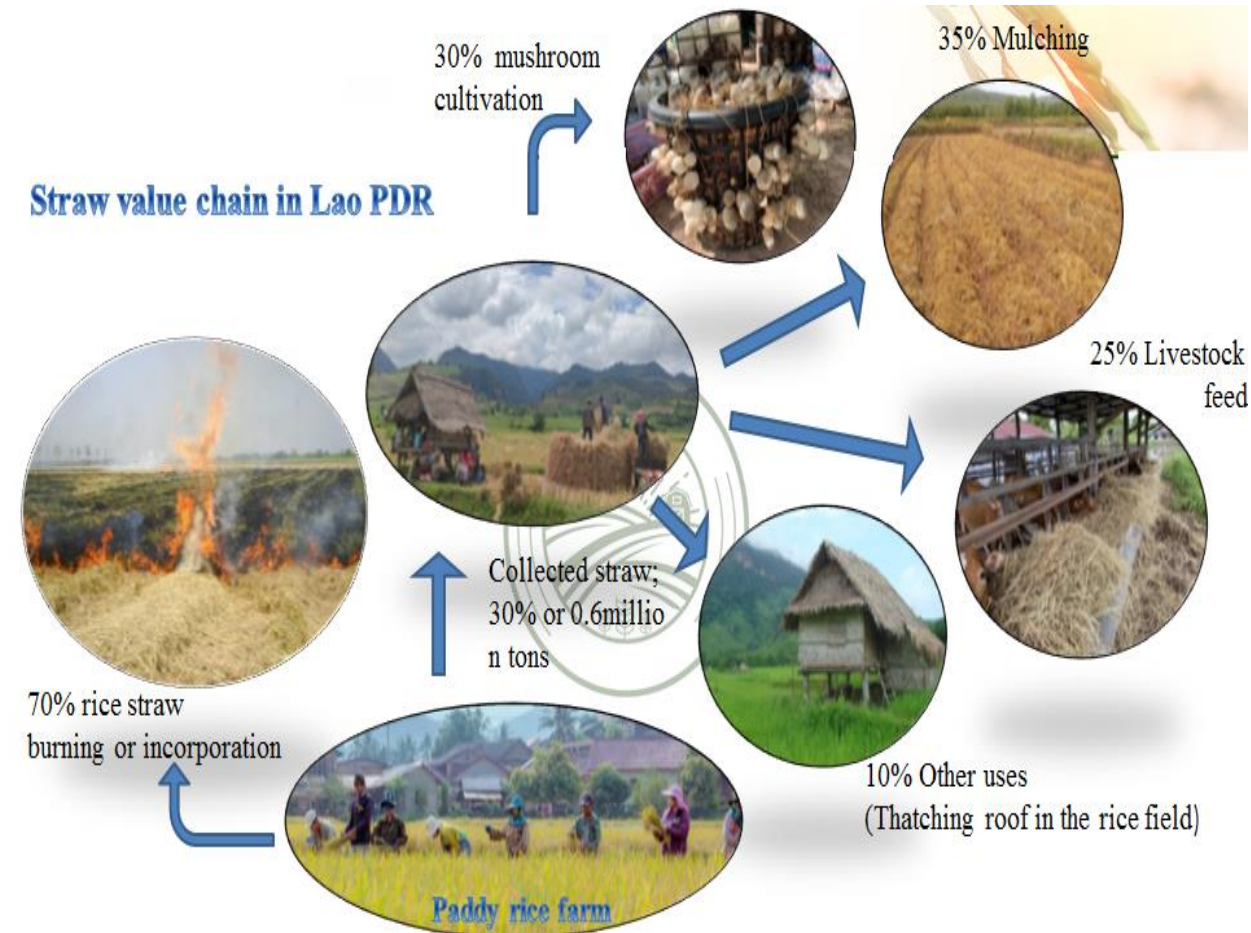
Table2: Crop residue In Laos

Amount of straw

In Laos, there is about **2 million tons of rice straw/ha/season**. However, the reality is that combine harvesters only cut about 50-60% of the rice straw (leaving about 40-50% of the stubble in the field). The table 2. was show the crop residue in Laos.

Crop	Area (ha)	Crop production (ton/year)	Tot Straw (ton/year)	used straw (%)
Rice	904,372	3,567,121	1,961,916	**
Maize	133,697	726,766	**	**
Legume	7,532	17,480	**	**
Root crop	25,028	759,394	**	**
Upland crop	17,653	65,912.11	**	**
Fruit tree	11,670	208,379	**	**
Vegetable	57,518	483,926	**	**

Project Circle in used



Characteristics of rice and rice straw in Laos (Cont.)

Current status of rice straw used in Laos

- Rice produces **about 3.5 million tons of rice** annually
- **2 million tons of straw.**
- According 70% of rice straw was burned in the field
- Remaining 30% was collected and used.
- 0.6 million tons (30% of the total amount of straw collected);
- Used for mushroom cultivation (**30%**), mulching (**35%**), livestock feed (**25%**), and other **uses (10%)**

Effect of crop residue burning

❑ Soil Health

- Elevated soil temperature causes death of beneficial soil organisms and microbial population
- 1 ton of paddy straw accounts for loss of 5.5 kg Nitrogen, 2.3 kg phosphorus, 25 kg potassium.

❑ Emission of green house and other gases

- Potential source of Green House Gases, other chemically & radioactive important trace gases & aerosols and other hydrocarbons

❑ Human Health

- Can aggravate and trigger respiratory disease
- Results in loss of soil nutrient and kill the soil organism
- Rice straw burning trigger heavy pollution



Air pollution impacted to human health



Overview of the rice straw management option



Option for the rice straw management

- Open-field burning
- Collection of the straw and Mulching
- Mushroom cultivation
- Cattle feed
- **Composting Produce fertilizer from straw**

Rice straw residue practice management in Laos

Baling and removing the straw

Used for

Livestock feed

Building materials

Bedding for vegetables cultivation and mushroom

Mulching for the orchards and other crops

Fertilizes composting



Rice straw residue practice management in Laos (Cont.)

Step of straw management and processing (Outdoor cultivation)

1. Prepare growing location



2. Prepare good straw



3. Soaking of the straw



6. Compost straw is put in bed



5. Prepare mushroom spawn



4. Soaking and turning



7. Care and watering



8. Harvesting



Rice straw residue practice management in Laos (Cont.)

Mushroom cultivation processing (Indoor cultivation)

1. prepare the house and shelves



2. prepare good straw



3. soaking of straw



6. compost straw put on shelves



5. Prepare mushroom spawn



4. Soaking and returning



7. care and watering



8. Harvesting



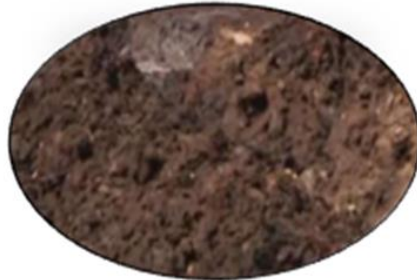
1. Rice straw + cow manure



2. Water and microbial culture



3. 50-70 °C
50-60% moisture content
pH (6.5-7)



6. Produce



5. 35-40 °C
40-50 moisture content
pH (6.5-7)



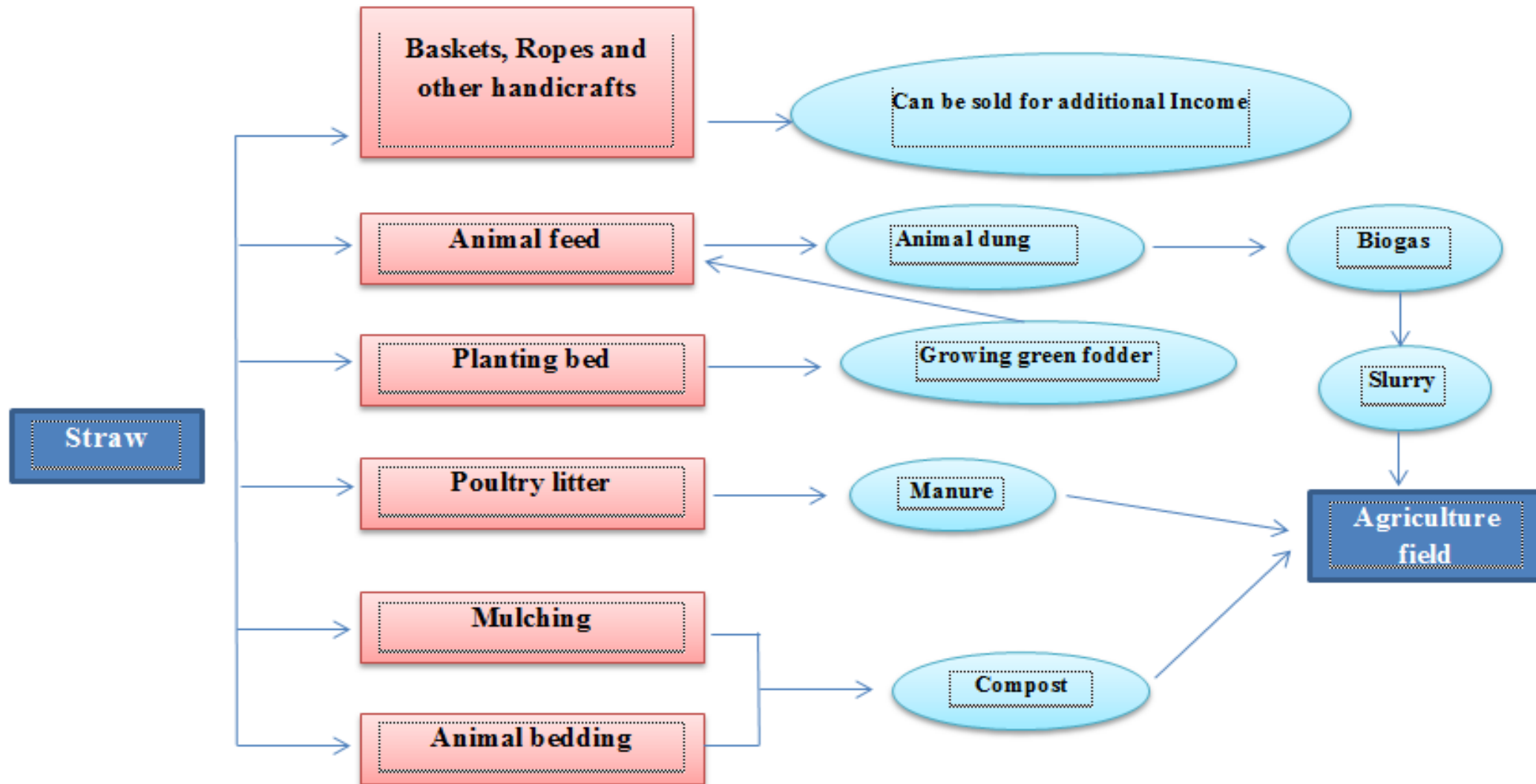
4. 10-15 days



Rice straw residue practice management in Laos (Cont.)

Produce organic fertilizer from rice straw (rice straw composting technique)

Rice straw management strategies

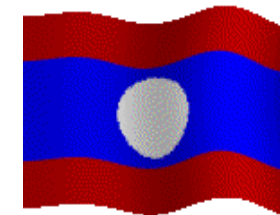


Conclusions and Recommendations

- Improving the rice straw byproducts value chain and implementing sustainable straw management
- Strategies are essential to persuading farmers to refrain from open-field burning and the associated harm to the environment and public health.
- **Managing straw include producing animal feed and mushrooms cultivation, composting to provide organic fertilizer etc....**
- **The government should be aware in resolving issues and assistant with foster farmers to understanding how to manage rice straw in the future.**
- **Promotion policy of integrated management and burning straw residue limited**
- **ASEAN members states and all stakeholders in closely collaboration to improving residue of straw.**

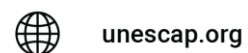
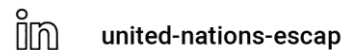
Next forward for straw management:

- Database setting crop residue management;
- Research on impact of difference technology residue management;
- Scaling up good management of residue and straw to farmers;
- Capacity building staff and farmer producers.



Thank you

Follow us:



Q&A



CSAM

Centre for Sustainable
Agricultural Mechanization

| Lao | Representatives of | Presentation |

