

SRI: Mechanisation, Land Leveling and Straw Incorporation

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Mechanisation Needs

- Straw incorporation into soil,
 - *Masukkan jerami dalam tanah*

- Land leveling,
 - *Meratakan tanah*

- Transplanting,
 - *Menanam dengan mesin*

- Weeding & soil aeration.
 - *Melandak*

Nutrient Content of Fresh Padi Straw

Kandungan Nutrien Jerami Segar

(1 ton fresh straw + 60 litres MOL)



Prof Iswandi Anas

$N = 6 \text{ kg} = 12 \text{ kg urea}$

$P = 2.2 \text{ kg} = 6 \text{ kg superphosphate}$

$K = 20.3 \text{ kg} = 40 \text{ kg KCl}$

$Ca = 1.4 \text{ kg}$

$Mg = 2.9 \text{ kg}$

$Zn = 20 \text{ g}$

$Si = 88 \text{ kg}$

Straw Incorporation into Soil

Perkaya Tanah Dengan Jerami

- Flailing implement,
 - *Peralatan menghancurkan jerami*
- Threshing the straw for easier incorporation into soil.
 - *Jerami hancur mudah dimasukkan ke dalam tanah*



Spraying of
MOL before
incorporation
into soil

Sembur MOL





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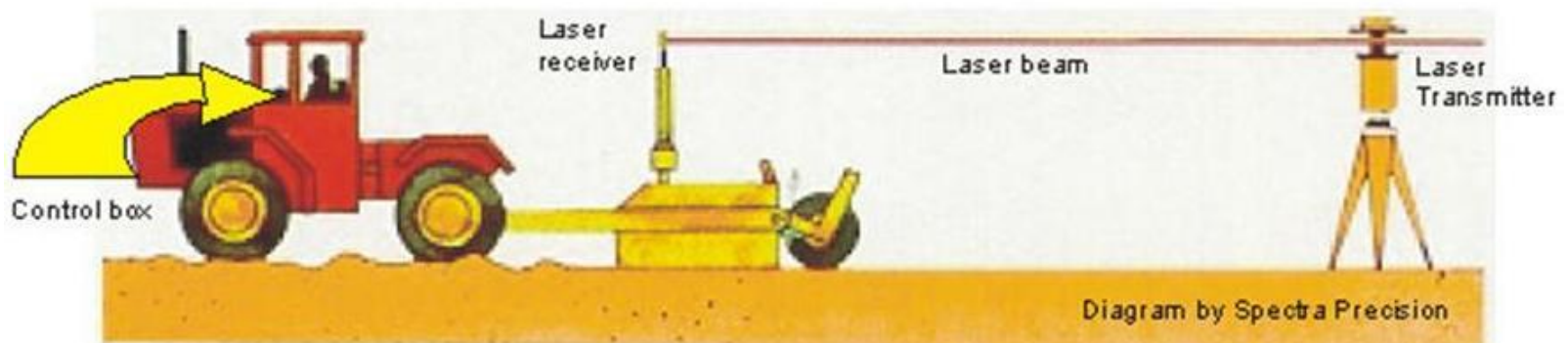






Land leveling

- Land very level,
 - *Tanah mesti rata*
- Technology available, practical and cheap.
 - *Technology wujud dan murah*





Manual Transplanting

- ❑ Young seedlings (10-day old),
- ❑ Single seedling,
- ❑ Shallow planting,
- ❑ 30 cm between rows, 30 cm within rows.



Improved Machine Transplanting

- ❑ Young seedlings (< 14 days),
- ❑ Single seedling,
- ❑ Shallow planting,
- ❑ 30 cm between rows, 18cm (Kubota) or 22 cm (Iseki) within rows.



At present, 5-8 seedlings/point, and deep.

Mechanised Weed Control

(Kawalan Rumpai Sawah)

- Looking for suitable implements,
 - *Peralatan yang sesuai*
- Innovative farmers,
 - *Petani kreatif meneroka inovasi*
- Extension support service organisations,
 - *Organisasi sokongan pengembangan*
- Projects by government agencies
 - *Inisiatif agensi kerajaan*

Manual Weeding / Aerating (*Melandak*)



Backbreaking..

“Sakit pinggang”

Weeding Implements

(Peralatan Melandak)



Basic but effective



Farmer's Innovation



First Prototype



Weeding Wheel Design



HEADACHE

Weeding Implements



Weeding Implements



Portable

7-Row Motorised Rotary Weeder

Mesin Melandak Bermotor 7-baris



Weeding Implements



11-Row Rotary Weeder Behind Transplanting Tractor

Engineering Unit, Jabatan Pertanian Negeri Selangor looking into its development

Engineering Unit, DOA Selangor



Very strong organisational support

Padi SRI and Nature Farming

Padi SRI dan Pertanian Ekologi

- Basic SRI methods + IPM + Soil ecological management + Sharing among farmers,
 - *Kaedah asas SRI + IPM + Pengurusan Ekologi Tanah + Perkongsian pengalaman petani*

- In Malaysia, for SRI to be accepted on a large scale, it needs to be mechanised.
 - *Perlu mekanisasi bagi Malaysia*

SRI: Biology of Soil (*Biologi Tanah*)

- Current emphasis on agrochemicals,
 - *Penekanan kepada agrokimia*
- Soil fertility and nutrient availability is primarily about empowering/harnessing the soil system,
 - *Memperkasakan sistem semulajadi tanah*
- Towards maintaining the productivity and sustainability of soil systems.
 - *Melestari daya pengeluaran dan sistem semulajadi tanah.*



SRI and Nature Farming

(SRI dan Pertanian Ekologi)

1. Conventional rice cultivation,
 - *Padi konvensional*
2. Reduce usage of agrochemicals by 50%,
 - *Kurangkan 50% penggunaan agrokimia*
3. Try SRI
 - *Cuba SRI*
4. Total nature farming approach.
 - *Kearah 100% pertanian ekologi*



‘Empowering natural enemies and ecological balance’

**Integrated Crop Management
Without Agrochemicals**

Conclusion (*Rumusan*)

- Needs research and/or developmental work:
 - *Perlu penyelidikan / pembangunan kaedah:*
 - Mechanisation of SRI,
 - *Mekanisasikan SRI*
 - Expose farmers to nature farming
 - *Dekatkan petani kepada pertanian ekologi*

Thank you

