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Sustainable Mechanization in sub Sahara Africa-a CARD Initiative

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A photograph showing a person wearing a blue shirt and a yellow hat, bent over and working in a rice field. The field is filled with young rice plants, and the background shows a clear sky and a distant horizon.

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CARD Challenge

- Double rice production in sub- Sahara Africa within the next 10 years
- Increase production by 14 million tons/an
- At present yield levels = 10 million ha more rice

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What are the options to do this?

- Decrease losses after harvest (15% max)
- Increase production by 1.5t / ha
- Increase the area growing rice (3%/annum)
- Combination of above

All options will require much more energy to be added to the system



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CARD 7th Steering Committee meeting Sierra Leone 2011

- To achieve CARDs goals, an environment must be developed that will support Private Sector Involvement in expanding rice production
- Mechanization to become the focus of a pilot program



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How much more power /energy will be required to double production

Conservative estimate –need to add another 3-4 million kW



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Present sources of energy in Africa



Human
85-90%



Animal
10-15%



Machine
less 1%



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Comparing the Systems

	Energy (MJ/ha)	Time (days/ha)	Total Cost (\$/ha)
Human	7500	420	850
Animal + human	8000	160	450
Small machine	7000	80	300
Large machine	9000	<2	350

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Analyzing the systems

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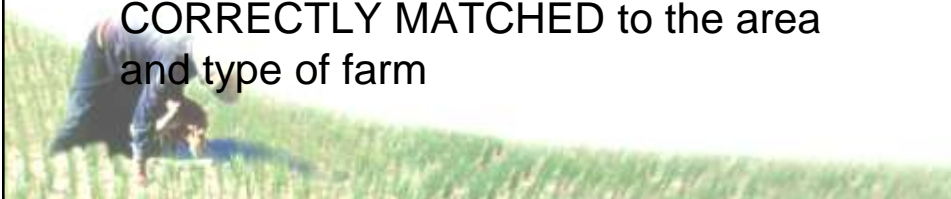
- Similar amount of energy needed
- Large differences in time required
- Cost machines are cheaper
- Overall small equipment “appears best bet”



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Putting power requirements into perspective

- 1 kW power to produce 5 tons grain
- 1kW power to farm 2-3ha
- 1kW power cost \$300-350
- Total cost per ha will be similar for small or large equipment as long as it is **CORRECTLY MATCHED** to the area and type of farm



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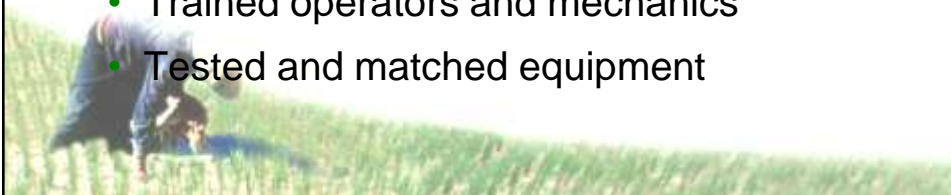
The historical problem is easy to see



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The solution is a lot more complex

- Government policies and support- tax, customs, accreditation bodies
- Local dealerships supported by multi-national companies
- Suitable longer term credit systems
- Technical training institutes functional
- Trained operators and mechanics
- Tested and matched equipment

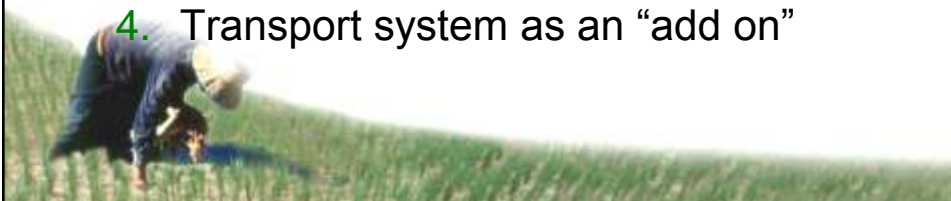


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Transition into sustainable mechanization in SSA

1. Private sector driven and Government supported
2. Small equipment- 2 wheel and small 4 wheel tractors, threshers
3. Based around Contract service providers
4. Transport system as an “add on”



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THANK YOU

