‘Sustainable Supply of Tapioca for Ethanol Production’

Partners and bodies involved in the project

- Thai-German Programme for Enterprise Competitiveness (On behalf of the German Ministry for Economic Cooperation and Development (BMZ))
- E3Agro-Project
- Ministry of Energy
- DEDE
- Bureau of Energy Research
- 1 Ethanol Company and
- 5 Cooperatives from the Korat area
- SEA-C.R. as mediator and external consultant

Sustainable Supply of Tapioca Ethanal Production

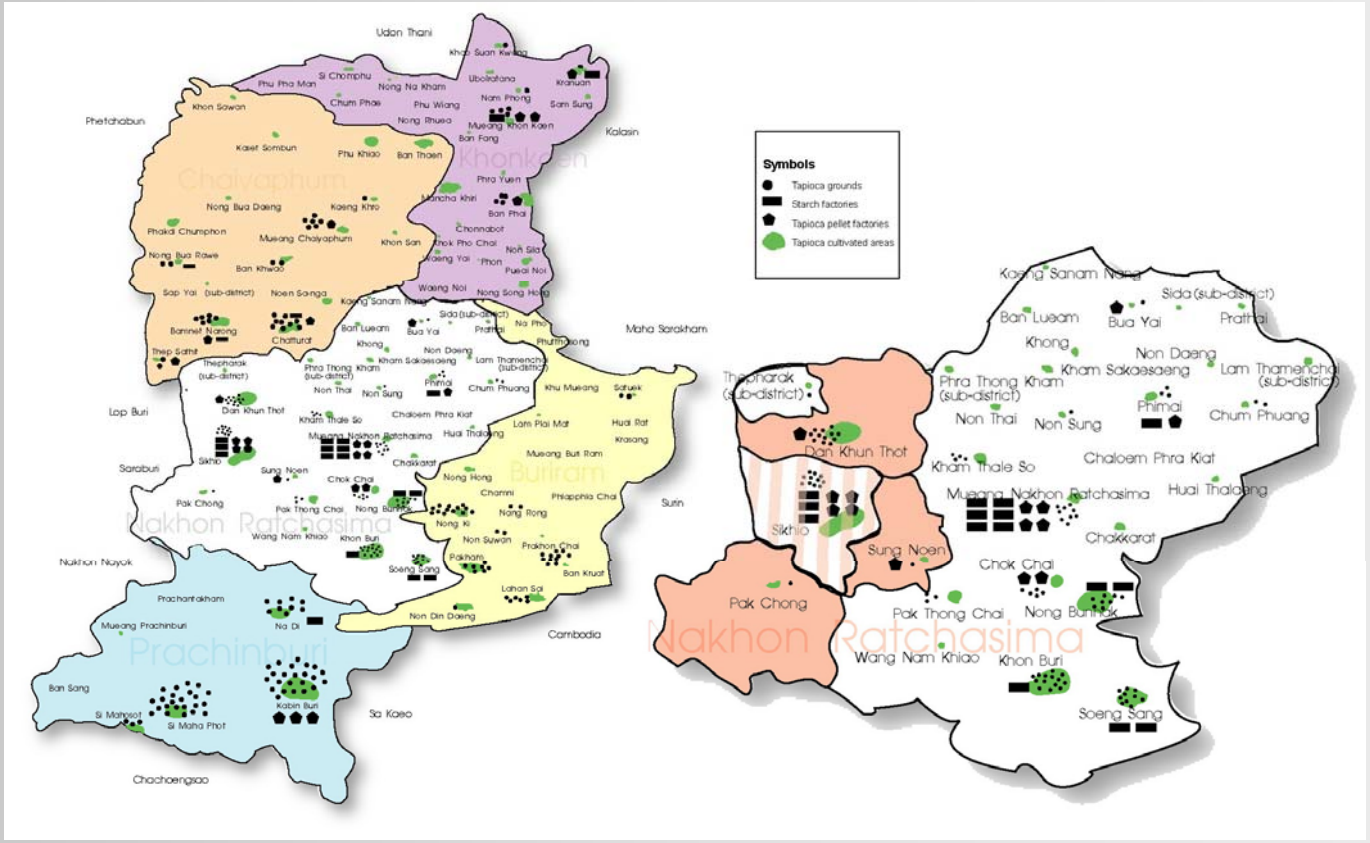
Background information

Project objective	• Concept for sustainable tapioca supply accepted by farmers and ethanol producers • Describe roles, measures and structures needed for the concept • Develop the concept outline sufficiently to become a potential pilot and role model
Goals to be achieved	• Envisioned maximum thru-put capacity for ethanol production: up to 1.000.000 tons of tapioca per year, or 3,000 tons per day (330 days/year) • Current maximum feedstock production capacity of cooperatives ≈ 170,000 rai with an average yield of 3 tons/rai, or ≈ 510.000 tons per year • Current potential maximum feedstock production per year 250.000 rai with an average yield of 4.5 tons/rai or ≈ 1,125,000 tons per year

Sustainable Supply of Tapioca Ethanal Production

- Crop preparation
- Crop sowing / planting
- Crop maintenance
- Harvest
- Selling tapioca roots
- Post crop harvest

- Average income: 4550 baht/rai
- Average cost: 3.300 baht/rai
- Average profit: 1250 baht/rai



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Cultivation:

Main issues for farmers:

- Capital and loans
- Know-How and Technology
- Labor
- Soils and fertilizers
- Irrigation
- Shifting markets
- Unstable prices
- Soil degradation
- Soil quality
- Closed markets

Analysis:

5 main problem areas for farmers:

- **Sales prices**
- **Loan conditions & availability of cash**
- **A “truly manageable” crop-cycle management**
- **Reliable markets**
- **Value-chain participation**

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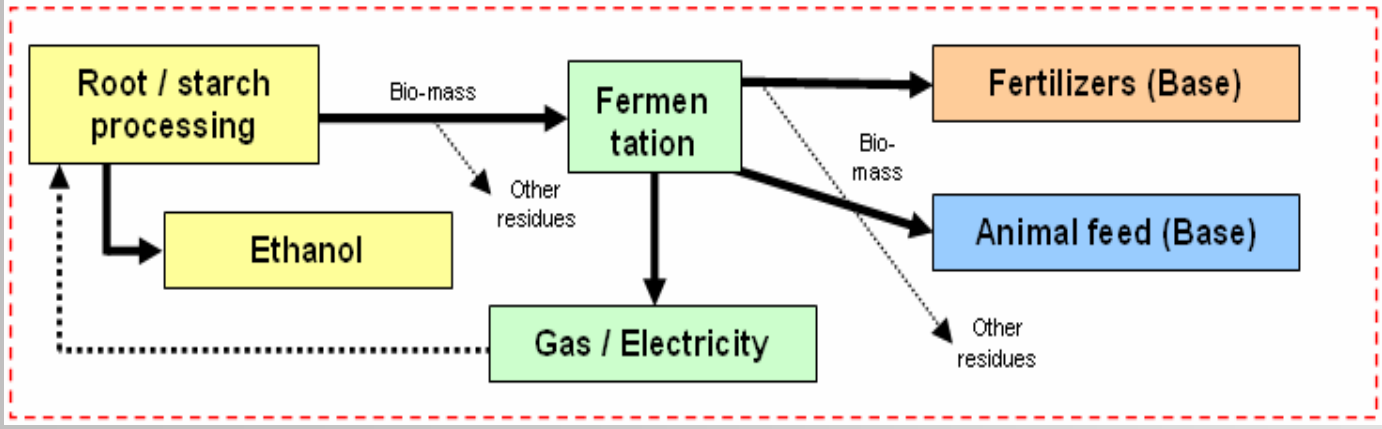

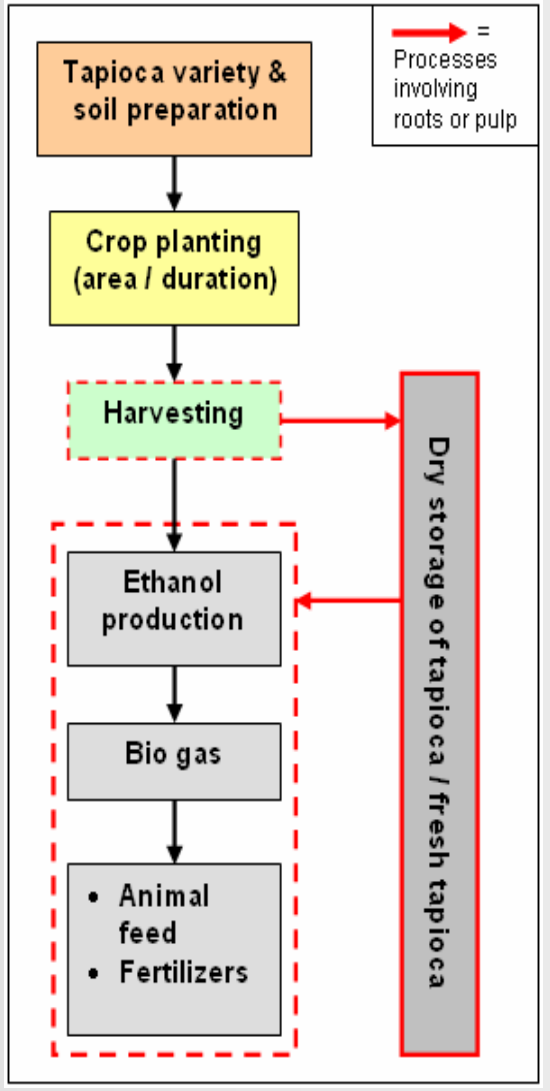

Main problem areas:

- **Un-interrupted feedstock supply**
- **Low-tech farming (low yield)**
- **Multiple and dispersed feedstock sources**
- **Risk - minimized mid and long - term development options**

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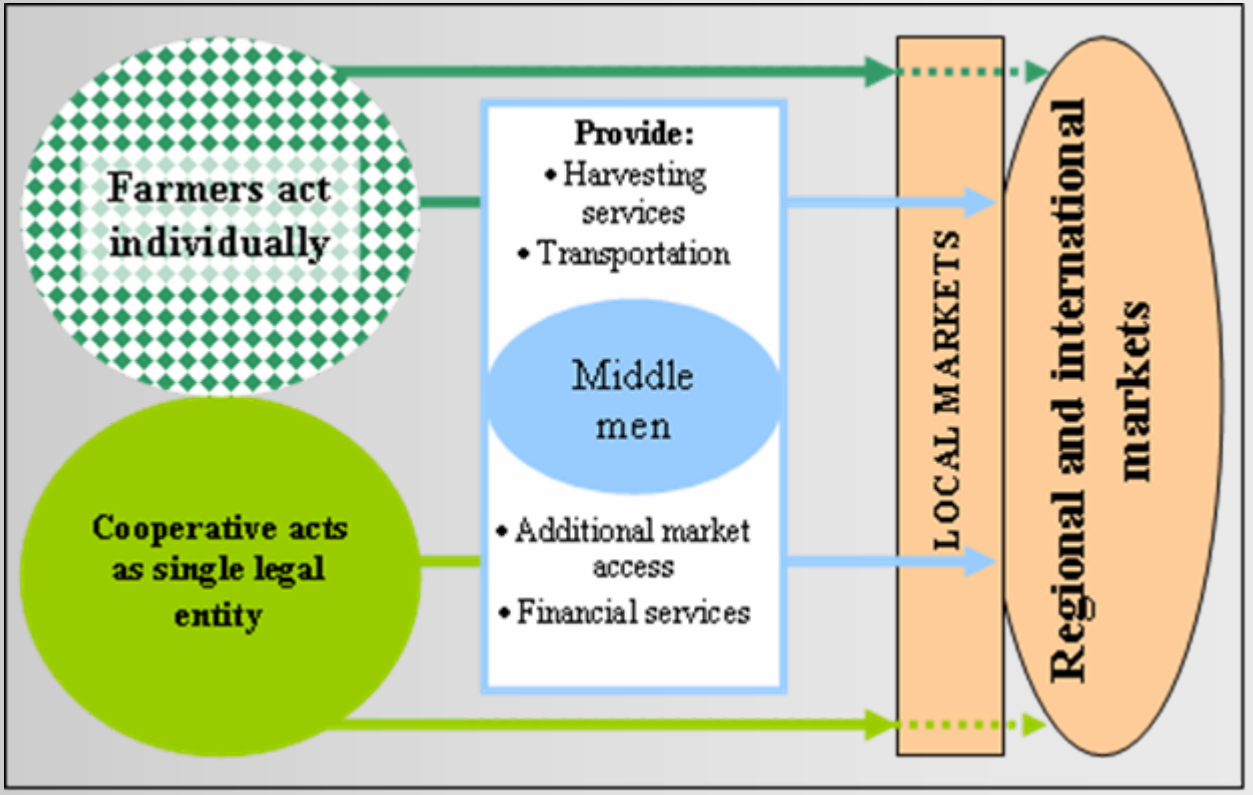
Market structure I

Main problem areas for farmers:

- **Loan conditions & availability of cash**
- **Reliable markets**
- **Value-chain participation**

Current market structure and modus operandi:



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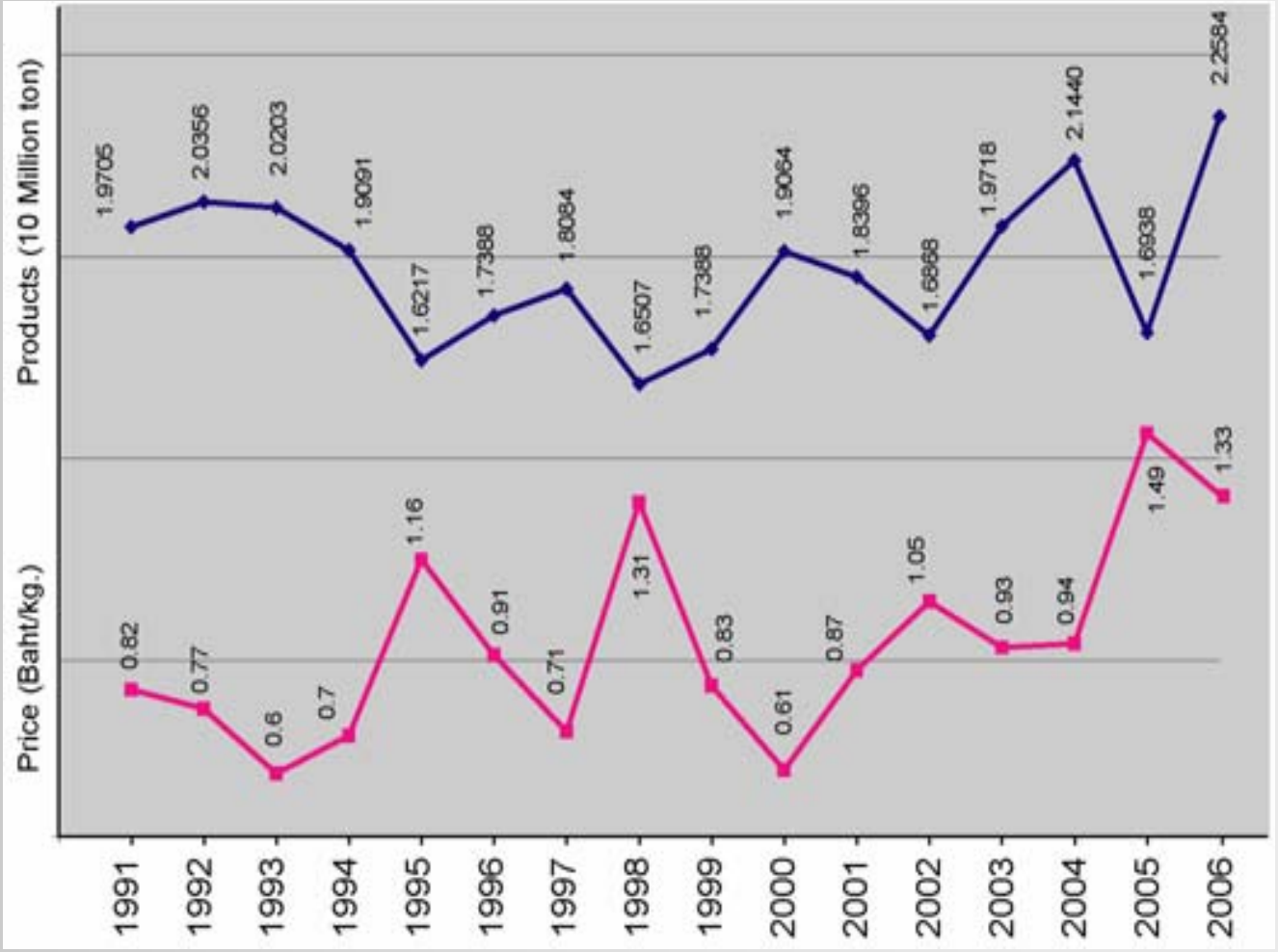
Market structure II

Main problem areas for farmers:

- **Sales prices**



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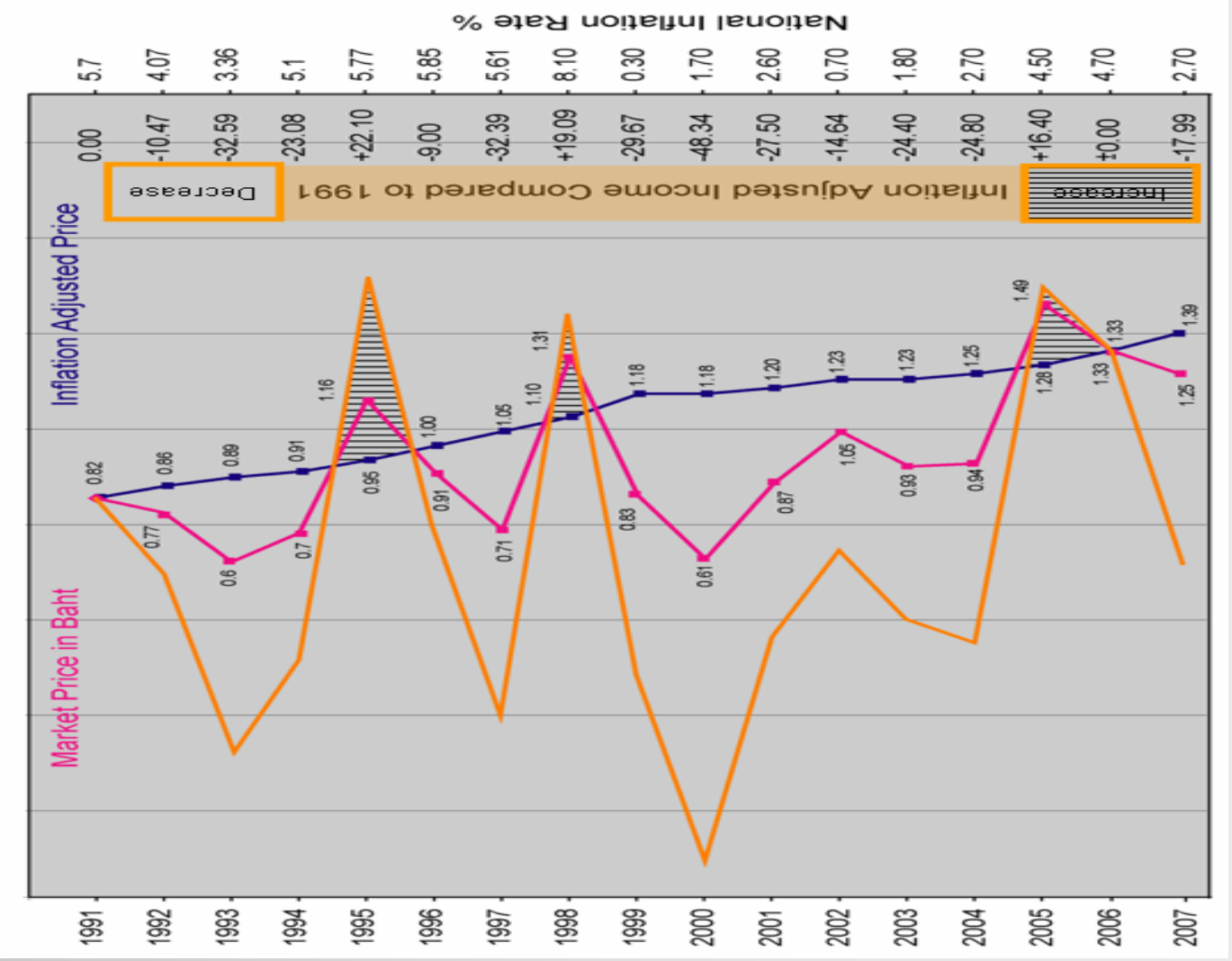
Market structure III

Main problem areas for farmers:

- **Sales prices**

Inflation adjusted prices



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Market structure IV

Main problem areas for farmers:

- **Sales prices**

Average income development

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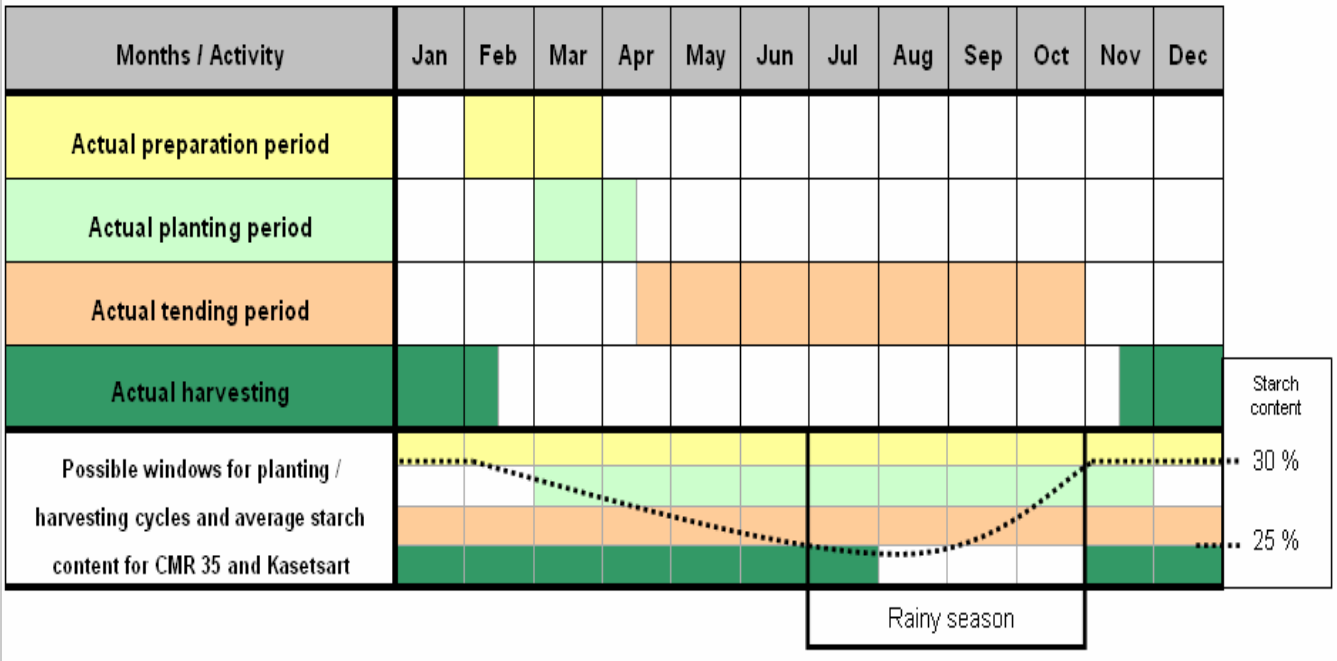
Market structure V

Main problem areas for farmers:

- **A “truly manageable” crop - cycle**



Management needs:

Investment

Coordination

Training

Innovation and new technology

Data management

Motivational needs:

Fair pricing and measuring

True mid- and long-term perspective

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Benefits likely to be instrumental in future standards for export

In the mid-term, new innovative technologies and management will improve

- Fertilizer/pesticide input ratio needed per rai of tapioca cultivation
- Improves soil conditions
- Save water resources
- Energy and transportation costs
- Arrests at least to some degree soil erosion
- Limits the amount of new land needed due to improved input/output ratio of starch per rai
- Economic participation of farmers
- Export options and opportunities of the all stakeholders/sector

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Policy recommendations I

A. Increase innovation and investment opportunities for farmers.	• Prices are the most important determining factor for a farmer • Standards for Thai tapioca feedstock that anticipate calls for standard requirements • Support new farming technologies with regulations and incentives • Farmer debt-restructuring for employed/practiced innovation or achieved increase in yield.
B. Re-evaluate the tapioca value chain product regulations	• Make export of tapioca chips less attractive and focus on starch and related products and ethanol for export • Support sustain able cooperation options over contract farming • Create standards for the different products along the value chain
C. Link renewable energy with sustainability in agriculture	• Restrict , or at least outline the type of land that can be used to grow renewables • Reward industries that comply with needs for innovation, environmental protection and sustainability demands