

**Workshop on:**  
**"Valorisation of traditional Processing of indigenous fruits"**  
 Under the project of "International network on preserving safety and nutrition of indigenous fruits and their derivatives"  
 funded by Leverhulme Trust, UK

**Wine Production from Cambodian Indigenous Fruits:  
 the Case of Jamun, Mango and Tamarind**

**Borarin BUNTONG,**  
 Faculty of Agro-Industry,  
 Royal University of Agriculture

14<sup>th</sup>-16th January 2013  
 Sunway Hotel, Phnom Penh, Cambodia



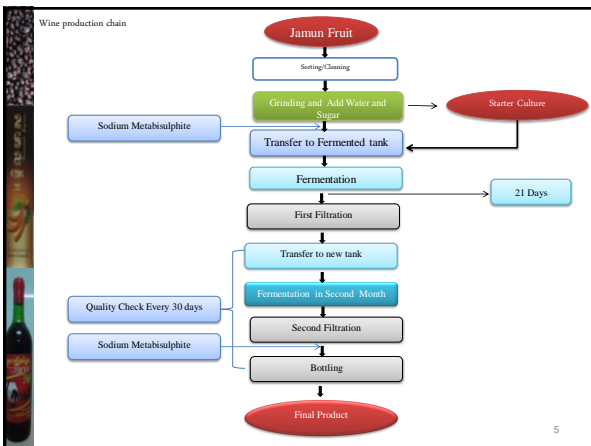

## Outline

- Jamun wine processing/production
- Mango wine processing/production
- Tamarind Liqueur (Ampel Meas) production/production

## Background

- "Making Tropical Fruit Wines as a Generation Income for Rural Households in Cambodia"
- JICA Grass-Roots Project on Development of Agro-Processing Technology through Rehabilitation of Traditional Industry in Cambodia

## Wine Production Chain



## Jamun wine processing

**Jamun wine processing**

## Jamun wine processing



Jamun wine quality testing



## Some Analytical Data

Trts	pH	TA (g/L)	TSS (°Brix)	Reducing sugar (%)	Ethanol (%)	Methanol (%)	Ester (mg/l)	Tannin (mg/100ml)
T1	3.80	0.06	9.83	1.82	9.50	0.05	0.82	2.07
T2	3.73	0.08	9.67	2.05	8.30	0.03	0.89	4.33
T3	3.73	0.06	9.23	1.22	9.40	0.03	0.70	3.00

Chemical analysis of Pring wine after one month fermentation for different yeast  
*Saccharomyces cerevisiae*, *Saccharomyces ellipsoideus*, and dry yeast (*Saccharomyces spp.*)

## Some Analytical Data

Trts	pH	TA (g/L)	TSS (°Brix)	Reducing sugar (%)	Ethanol (%)	Methanol (%)	Ester (mg/l)	Tannin (mg/100ml)
T1	3.6	0.16	8.67	3.76	10.17	0.05	0.28	1.11
T2	3.5	0.25	8.50	4.01	9.00	0.04	0.29	0.89
T3	3.6	0.19	9.00	5.06	9.73	0.07	0.32	0.94

Chemical analysis of Pring wine after one month fermentation for different amount of yeast

## Some Analytical Data

Trts	pH	TA (g/L)	TSS (°Brix)	Reducing sugar (%)	Ethanol (%)	Methanol (%)	Ester (mg/l)	Tannin (mg/100ml)
T1	3.80	0.06	9.83	1.82	9.50	0.05	0.82	2.07
T2	3.73	0.08	9.67	2.05	8.30	0.03	0.89	4.33
T3	3.73	0.06	9.23	1.22	9.40	0.03	0.70	3.00

Chemical analysis of Pring wine after one month fermentation for different amount of water

## Mango Wine Processing



Starter culture preparation and adding in mango wine before fermentation

## Mango Wine Processing



Raw mango preparation



Chemical substance analysis of mango wines

## Some Analytical Data

Trts	pH	TA (g/l)	TSS (°Brix)	Reducing Sugar (%)	Ethanol (%)	Methanol (%)	Ester (mg/l)
T1	3.6	0.23	9.7	5.51	9.0	0.015	0.467
T2	3.7	0.25	9.8	5.58	9.4	0.020	0.428
T3	3.7	0.24	10.0	6.01	8.6	0.017	0.505

Chemical substance analysis of mango wine after one month fermentation for topic of different yeast

## Some Analytical Data

Trts	pH	TA (g/l)	TSS (°Brix)	Reducing Sugar (%)	Ethanol (%)	Methanol (%)	Ester (mg/l)
T1	3.40	5.2	8.7	3.53	9.93	0.046	0.211
T2	3.23	5.0	8.2	3.00	10.03	0.051	0.375
T3	3.20	4.5	7.5	2.50	8.77	0.042	0.129

Chemical substance analysis of mango wine after one month fermentation for topic of different water

## Some Analytical Data

Treatments	pH	TA (g/l)	TSS (°Brix)	RS (%)	Alcohol (%)	Methanol (%)	Ester (mg/l)
T1	3.5	2.7	9.6	4.3	9.4	0.02	0.08
T2	3.5	3.4	7.4	0.3	10.6	0.02	0.08
T3	3.5	3.4	7.4	0.3	10.6	0.02	0.08

Chemical substance analysis of mango wine after one month fermentation for different mango

## Dissemination Activities



In RUA and In Takeo Province



## Tamarind Wine

## Tamarind Liquors

- Ampel Meas : A liqueur made from tamarind and rice liquor.
- The rice liquor is produced by famers in Takeo Province under technical support and quality control by RUA, Nagoya University and Japanese technical experts.
- Run by C.J.H.A.P “Cambodia Japan High-quality Agroproduct”
- JICA Grass-Roots Project on Development of Agro-processing Technology through Rehabilitation of Traditional Industry in Camvodia



## Acknowledgement

- The presenter would like to appreciate for permission of using the information and data from Mr. Kong Thong, project coordinator for the CARF funded project entitle “Making Tropical Fruit Wines as a Generation Income for Rural Households in Cambodia” and MR. Hamano for the project of “JICA Grass-Roots Project on Development of Agro-Processing Technology through Rehabilitation of Traditional Industry in Cambodia”

Thank you very much for your kind attention