Jatropha curcas: Its Potentials and Threats

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Declaration on East Asian Energy Security ratified by the 16 heads of state of the Association of Southeast Asian Nations (ASEAN) and its dialogue partner

R.A. No. 9367 or the Biofuels Act 2006 will promote the use of alternative transport fuels and adopt MEASURES TO DEVELOP RENEWABLE AND SUSTAINABLY-SOURCED CLEAN ENERGY WITHOUT CAUSING DETRIMENTAL EFFECTS TO THE NATURAL ECOSYSTEMS WHICH INCLUDES HUMAN HEALTH AND THE ENVIRONMENT

Jatropha Biodiesel Project

MEGA NURSERY

1,500 hectares
(PNOC-AFC)

PLANTATION

700,000 hectares
(Partners)

BIODIESEL PRODUCTION

1,000,000 MT/year
(Partners)

www.pnoc-afc.com.ph

Commercial uses of Jatropha

Source: www.pnoc-afc.com.ph

Jatropha Plant

Comes from Greek words:

- *jatros* (doctor)
- *trophe* (nutrition)

Known as tubang bakod because it has been used as fence against grazing animals

General Description of the Jatropha Plant

A non-edible plant that grows mostly in tropical countries like the Philippines

Resistant to drought and can easily be planted or propagated through seeds or cuttings

Starts producing seeds within 14 months, but reaches its maximum productivity level after 4-5 years.

Plant remains useful for around 30-40 years.

Toxins derived from the Jatropha curcas plant

Several other parts of the plant body, such as, bark, fruit, leaf, root and wood contain HCN that contributes to their toxicity

Diterpenes have been isolated from seeds (Adolf *et al.* 1984) and roots (Naengchomnong *et al.* 1986; Chen *et al.* 1988).

The various stages of Jatropha curcas fruit development

Makalinao IR, " A Descriptive Study on Jatropha Seed Poisoning" Hum Vet Toxicol 1993

- 23 Children had diarrhea, including blood in the stools, nausea and vomiting, varying degrees of dehydration

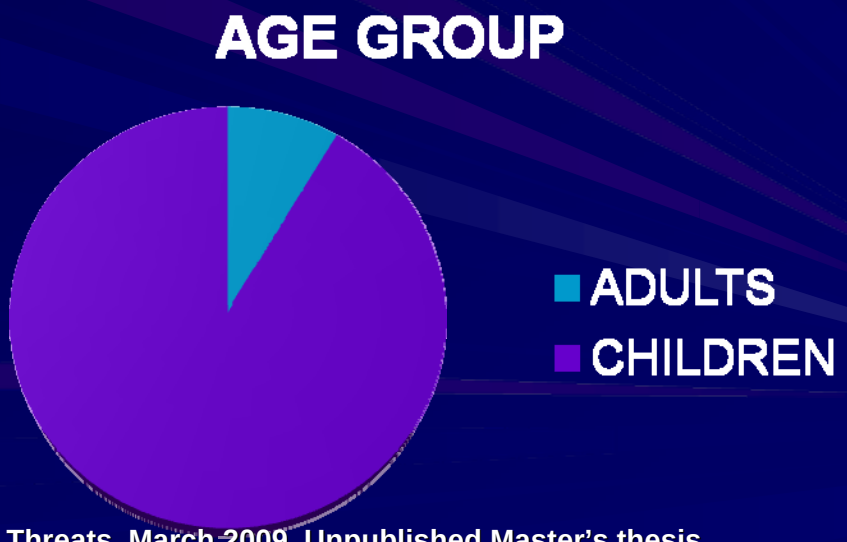
Data from Poison Center Showed Jatropha seed ingestion in the Ten Leading Causes of Poisoning in Children in the Philippines

News Reports of Jatropha Poisoning in the Philippines after the Biofuels Act 2006

Bohol	• 21 children poisoned July 2007
Iloilo –	• 14 children poisoned February 2007
Zamboanga	• 3 children poisoned February 2007

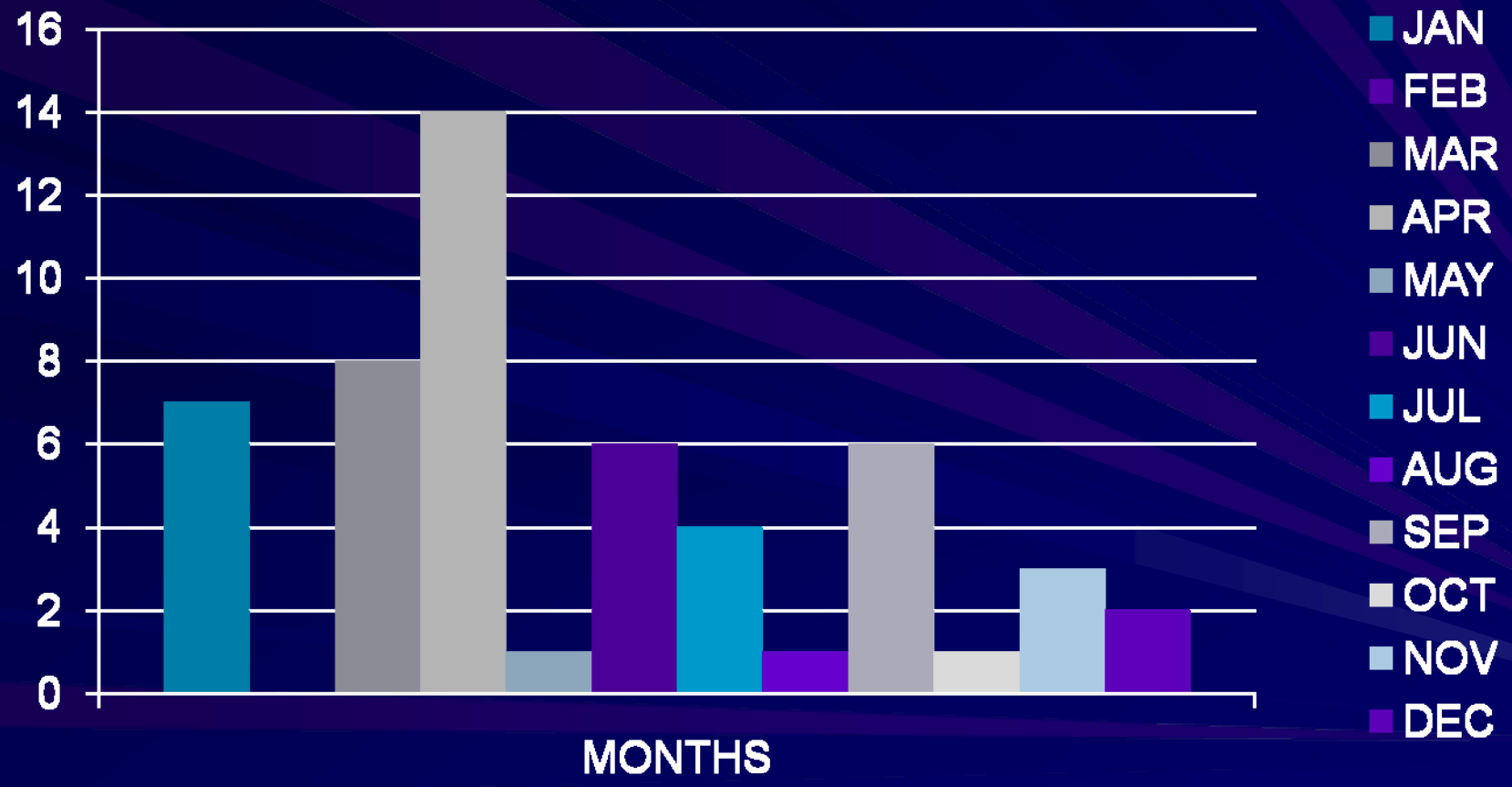
Retrospective Review of Jatropha Poisoning Cases 2008

- Patient Records of the UP National Poison Management and Control Center were reviewed
- 58 cases were included in the study
- Age distribution
  - Children = 53
  - Adults = 5



Source: Makalinao IR, Jatropha Curcas: Its Potentials and Threats, March 2009 Unpublished Master's thesis For the degree of MA in Peace and Security Studies Bicol University

Distribution of Jatropha Cases According to Month of the Year 2008



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Clinical Manifestations of Jatropha Poisoning, Retrospective Review 2008, UPNPMCC

(source Unpublished Thesis Makalinao IR Jatropha Curcas: Its Potentials and Threats)

	Children n=53	Adults n=5
Weakness	4	1
Abdominal pain	23	1
Diarrhea	29	1
Nausea and Vomiting	52	1
Dizziness	7	1

Average heart rate in 20 children = 109 ± 21

Source: Makalinao IR, Jatropha Curcas: Its Potentials and Threats, March 2009 Unpublished Master's thesis For the degree of MA in Peace and Security Studies Bicol University

Poisoning from the jatropha Seed Oil

Jatropha Seed Oil Poisoning, UP NPMCC 2008 (N=5)		
	Children (n=1)	Adult (n=4)
Abdominal Pain	1	4
Diarrhea	1	4
Nausea and Vomiting	1	4

Source: Unpublished Thesis Makalinao IR
Jatropha Curcas: Its Potentials and Threats

Based on the outcome of poisoning from *Jatropha Curcas*, in this review only 1 out of the 58 patients died.

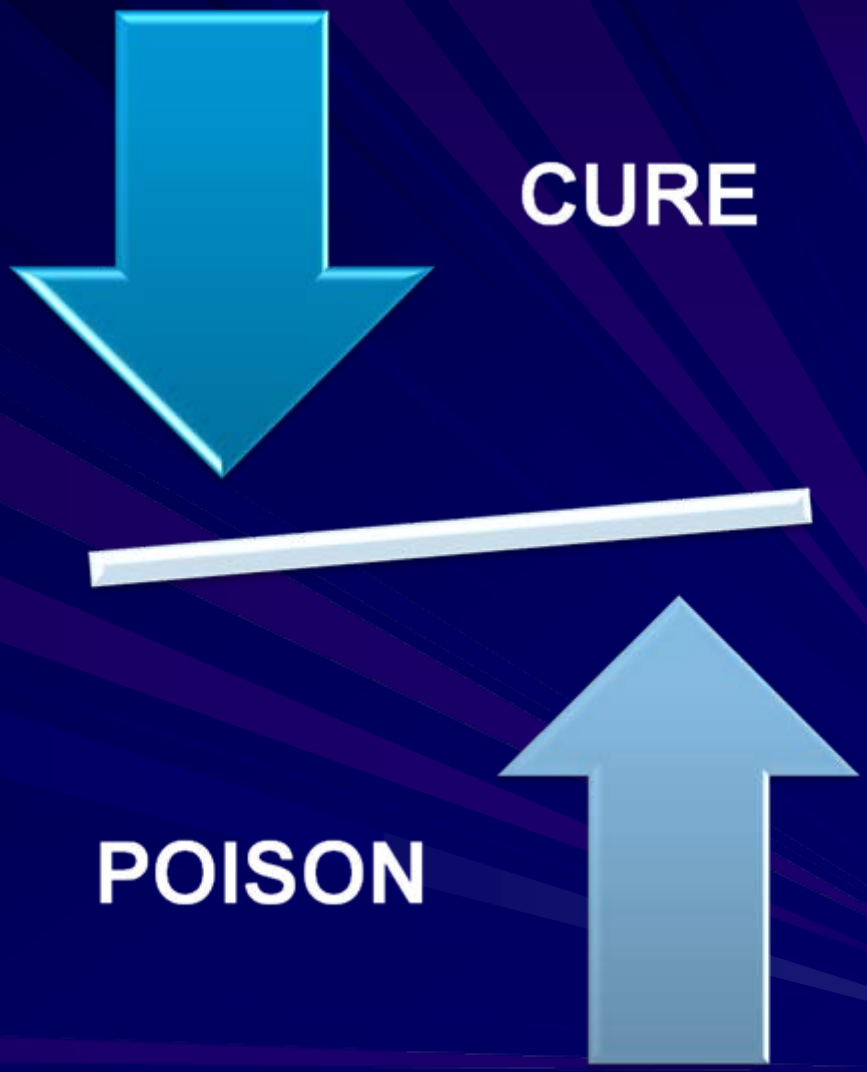
The only child who died was a nine year old girl who ate the leaves of the Jatropha plant.

A personal communication made with the Poison Information Officer who attended to the patient revealed that severe dehydration and electrolyte imbalance were among the possible reasons that lead to her untimely demise.

All the others improved following the treatment protocol previous written by the researcher as the "Treatment Algorithm for Jatropha Seed Poisoning" that has been in use since its publication in 1997.

Source: Makalinao IR, Jatropha Curcas: Its Potentials and Threats, March 2009 Unpublished Master's thesis For the degree of MA in Peace and Security Studies Bicol University

Many of the traditional medicinal properties of Jatropha curcas need to be investigated in-depth for the marketable therapeutic products vis-à-vis the toxicological effects



Information Educational Campaign materials

What the public should know

- Regardless of the reported edibility of the seeds of some plants, their good taste, the misapplied common names, pistachio or cashew, or any other factors, it is dangerous to eat seeds of even the supposedly harmless varieties.
- Children are more commonly poisoned by eating seeds within their home and school surroundings
- All parts of the plant may potentially cause poisoning

Weighing Risks Versus Benefits