

The 25th RCA National Representative Meeting  
26-28 May, 2003

# Progress of FNCA Projects

**Sueo MACHI**

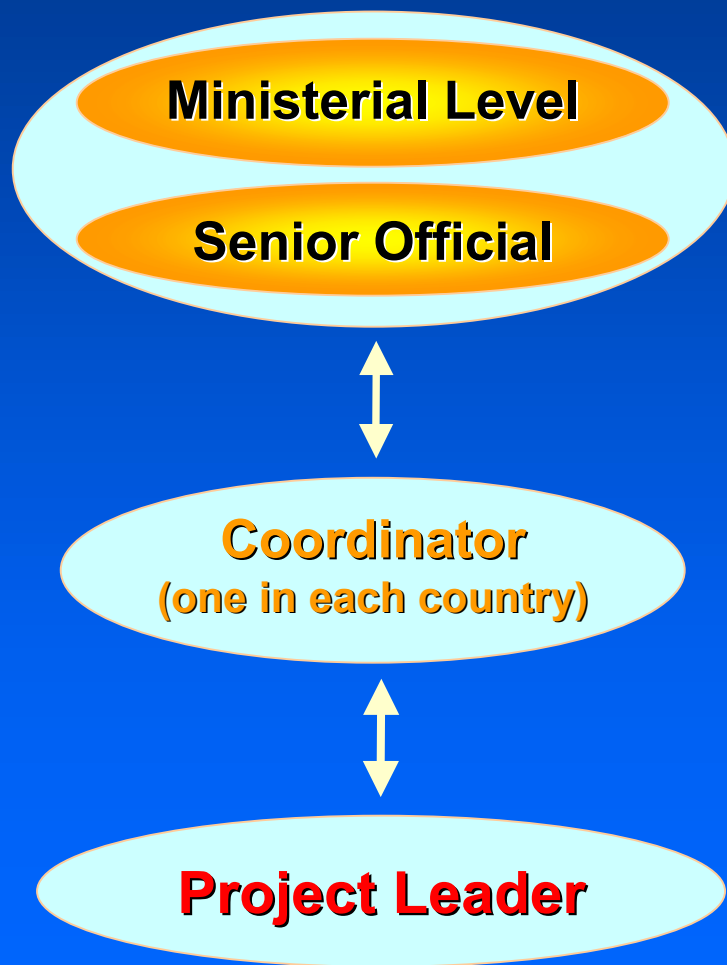
**FNCA Coordinator of Japan**

**Senior Managing Director, JAIF**

**Annex 18**

# FNCA Forum for Nuclear Cooperation in Asia

Participating Countries: Australia, China, Indonesia, Japan, Korea, Malaysia, the Philippines, Thailand, Vietnam



## FNCA Vision Statement

The FNCA is to be recognized as an effective mechanism for enhancing socioeconomic development through **active regional partnership** in the peaceful and safe utilization of nuclear technology.

## Goals of FNCA

- **To achieve socio-economic development** by safe utilization of nuclear technology
- To utilize **nuclear technology** in those fields where it has a **distinct advantage**
- To **respond to the needs** of the FNCA



**The 3rd FNCA Meeting  
Ministerial Level Meeting  
30-31 Oct. 2002, Seoul, Korea**







## The 4th Coordinators Meeting 5-7 March, Okinawa, Japan

# Eleven Projects in 8 Fields

## 1. Research Reactor Application

- Tc-99 generator from (n- $\gamma$ ) produced Mo-99.
- Neutron scattering studies on natural polymer & products
- NAA for airborne particulates

## 2. Application of Radioisotopes and Radiation for Agriculture

- Mutation Breeding of drought resistant soybeans and sorghum
- Bio-fertilizer

## 3. Application of Radioisotopes and Radiation for Medical Use

## 4. Industrial Application

- Low energy accelerator application

## 5. Radioactive Waste Management

## 6. Nuclear Safety Culture

- Nuclear Safety Culture for Research Reactor

## 7. Human Resources Development

## 8. Public Information of Nuclear Energy

## *Progress of FNCA Projects*

# *Tc-99m Generator Production*

- (n,  $\gamma$ ) reaction produced Mo-99 to be enriched on PZC adsorbent
- Bench scale column loading plant will be installed in BATAN by Kaken in December 2003

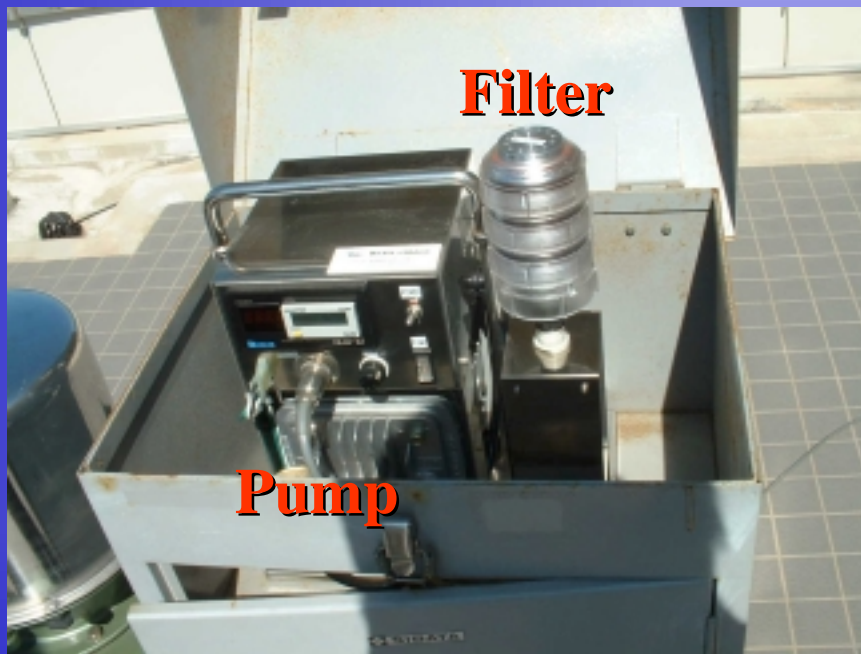
**Small experimental  
loading equipment  
at KAKEN**



## *Progress of FNCA Projects*

# *NAA for Airborne Particulates*

- ◆ Collection of samples by filters provided by Japan for analysis by NAA.
- ◆ Publication of compiled results in 2003.
- ◆ Strengthening linkage with environmental sectors.
- ◆ Development of Ko method to significantly increase efficiency of NAA. China-Vietnam-Japan collaboration.



**Sample Collection of  
Airborne Particulates**



## *Progress of FNCA Projects*

# *Neutron Scattering Studies*

- ◆ Focusing on the structural studies of natural polymers
- ◆ Research cooperation between Thailand, the Philippines and Japan to be carried out in Japan by experts from these countries.



**Small Angle  
Neutron Scattering  
(SANS) Devices  
in JAERI**



# *Mutation Breeding*

## **Specific R & D Programme**

### **i) Drought Tolerance**

- a. Sorghum - staple food -
  - Indonesia and China
- b. Soybean
  - the Philippines and Vietnam

**Mutants were exchanged for collaboration in 2002.**

### **ii) Insect Resistant : Orchid**

- China, Indonesia, Japan, Malaysia, Thailand, Vietnam



**Sorghum**

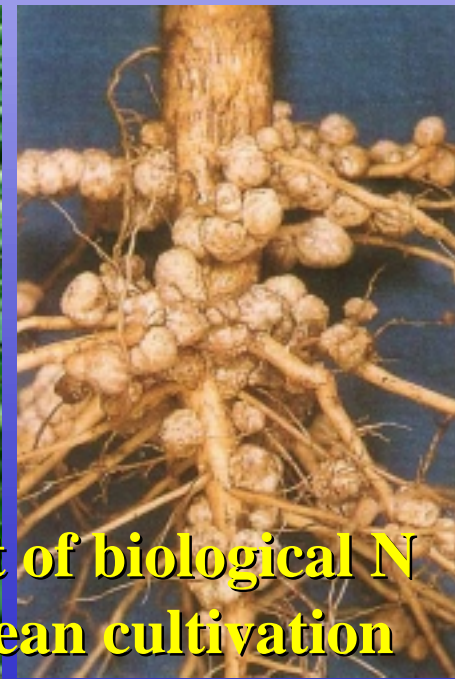


**Orchid**

## *Progress of FNCA Projects*

### *"Biofertilizer" for Better Crop Production in Environmentally Friendly Way*

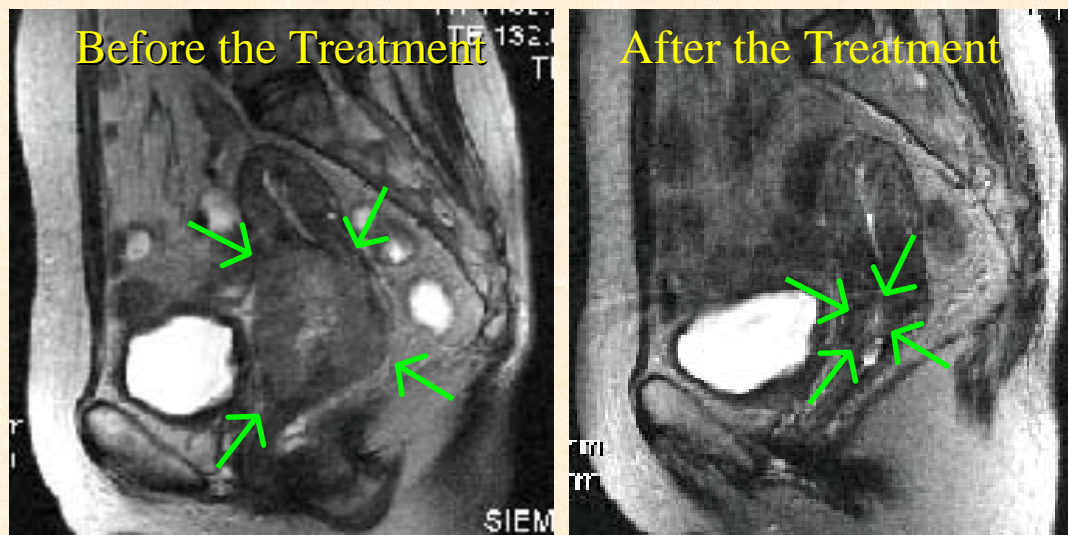
- ◆ N-15 tracer technique for selection of nitrogen fixing microorganism.
- ◆ Radiation for preparation of inoculant.
- ◆ Field tests to demonstrate the improvement of yields.



**Beneficial effect of biological N fixation in soybean cultivation**

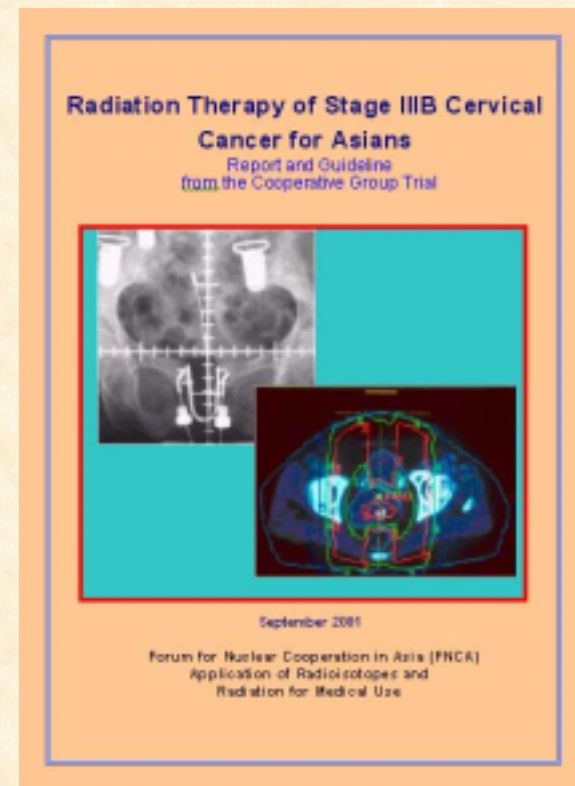


# *Radiotherapy of Uterine Cancer*



**MRI Image**

**210 clinical tests:**  
**Survival rate after**  
**5 years is (2002): 53.7%**  
**Local Control rate: 81.5%**



**Book of Protocol**  
**Published in 2002**



## *Progress of FNCA Projects*

# *Application of Electron Accelerator*

- ◆ Development of low energy, low cost, self-shielded, easily-operated electron beam irradiation system for liquid, film, particulates and gases.
- ◆ Demonstration for liquid system was conducted in December 2002 at JAERI.
- ◆ Specific applications should be demonstrated with cost analysis.



**Low Energy Electron  
Accelerator in JAERI**

## *Progress of FNCA Projects*

### *Task Group for Improvement of Management of Spent Radiation Source*

**Thailand, the Philippines 2001**

**Indonesia, Korea 2002**

- **Regulation and rules**
- **Reason for accident and mismanagement if any**
- **Facilities and good management practice**
- **Training of workers**
- **Monitoring export products**



**Task Group Meeting in BATAN  
Indonesia for Spent Radiation  
Source Management in 2002**

## *Progress of FNCA Projects*

# Safety Culture of Research Reactor Peer Review for Research Reactors

### Objectives:

- To foster safety culture in research reactors by identifying good practices and areas for further improvement.
- To learn each other as equal partners through peer review process.

### Process:

- Member countries conduct self-assessment for their own research reactor(s) along the review items.
- Member countries visit a specific plant and conduct peer review, in conjunction with the project workshop.
  - ✓ Interview / Discussion with plant personnel,
  - ✓ Confirmation through documents, drawings, etc.
- The first peer review took place at the Dalat Nuclear Research Institute in Vietnam in Jan. 2003.





## *Human Resources Development*

- **Survey of basic data on HRD to improve HRD strategy from 2002 to 2004.**
- **Exchange of training texts**
- **Enhancement of efficiency of ongoing “Nuclear Scientist Exchange Programme” to meet needs and interests.**
- **Exploration of regional networking for research, education and training**

## *Progress of FNCA Projects*

### *Public Information of Nuclear Energy*

- **Joint survey on “Radiation” for high school students in 8 countries, 1,100 students each in urban areas.**
- **Results of the survey to be published in 2003.**
- **Following up the survey – expert lectures and exhibition at schools to enhance knowledge on “Radiation and Nuclear” of both students and teachers**



**Joint survey on “Radiation”  
in Bangkok, Thailand,  
September 2002**

Q7 What do you imagine when you hear the word “radiation”? Please select as many as you like.

Percentage of Persons who Selected

1. Roentgen  
(X-ray)Radiography

2. Hiroshima, Nagasaki  
or Nuclear Weapon

3. Nuclear Power  
Generation

4. Cancer Therapy

5. Mutation Breeding  
of Crops

6. Chernobyl

7. Food Irradiation

