

Rhodora V. Azanza: The Red Tide Lady



(An Accomplished Filipina Scientist)

by Iris Uy Baula

Dr. Rhodora V. Azanza, Professor of the Marine Science Institute, University of the Philippines-Diliman, is internationally recognized for her research on seaweeds and harmful microalgal biology, dynamics and management. She has pioneered multidisciplinary research and development projects in marine and environmental sciences, particularly in relation to seafood safety and the management of coastal environments. She has been instrumental in conceptualizing and implementing interdisciplinary programs that aim to model harmful algal blooms, e.g., red tide outbreaks, identify factors that affect their occurrence, and design proactive management strategies that can mitigate their harmful effects.

Her paper on the life history and culture of the toxic microalgae, *Pyrodinium bahamense* var. *compressum*, won the Philippines' Department of Science and Technology (DOST) 1995 *National Science and Technology Week Award for Outstanding Research and Development in the Biological Sciences*. Her interdisciplinary research program on Harmful Algal Blooms won the 2006 Commission on Higher Education (CHED) *Best Higher Education*

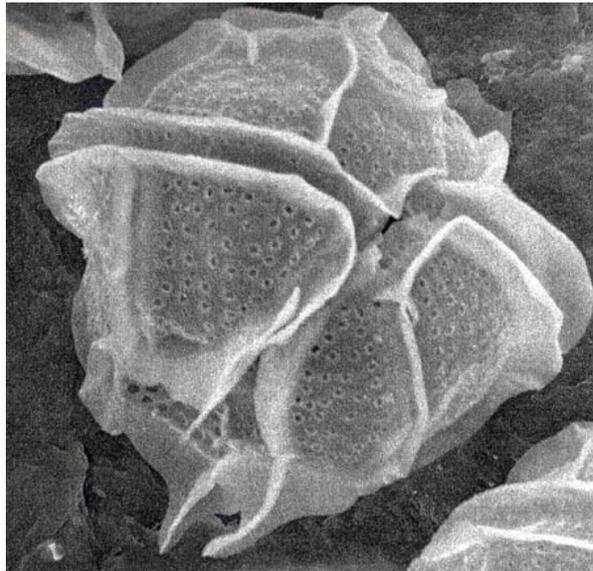
Institution Research Program Award for the National Capital Region and ranked second on the National level. Management of toxic *Pyrodinium* blooms has helped mitigate or prevent the negative socio-economic impacts on the livelihood of coastal people.

In July 2009, Dr. Azanza was elected Academician in the Biological Sciences Division of the Philippine National Academy of Science and Technology (NAST).

Dr. Azanza has also made significant contributions to understanding the biology, physiological ecology and seafarming of the carageenophytes and agarophytes: *Eucheuma*, *Gracilariopsis balinae*, *Kappaphycus alvarezii* (Doty) Doty and *Gracilaria heteroclada*. In 1998, she won the *1st Prize Marinalg International Award for Best Paper* for her research delivered during the 15th International Seaweed Symposium and published in *Hydrobiologia*. She has been nominated and selected as one of the members of the International Seaweed Association Council, a rare post to be offered to a woman.



Kappaphycus seaweed



Scanning electron micrograph of *Pyrodinium bahamense* var *compressum*.

Cited in the International Atomic Energy Agency (IAEA) as one of “Sciences Serving People”, her research and development project entitled: “Application of Nuclear Techniques to Address Specific Harmful Algal Bloom Concerns” started in the Philippines as a national project and became the basis for the regional and international projects with the same focus. From the said program, the following techniques, technology and significant information were generated: 1) a lead-210 (^{210}Pb) facility that can provide information on the date of sediments; 2) a dinoflagellate cyst analysis facility that serves as a regional resource unit of the IAEA; 3) the local capability to isolate and label saxitoxin to be used for radiometric binding assay which can back up or replace the mouse bioassay for determining levels of Paralytic Shellfish Poisoning (PSP) toxins; 4) *Pyrodinium* models essential in describing and understanding bloom dynamics which can be used for predicting bloom occurrence, and 5) a grazing experiment facility that can determine possible biological controls of *Pyrodinium*, one of which is *Noctiluca scintillans*.

Nuclear techniques have been employed in the development of Paralytic Shellfish Poisoning (PSP) Assay, dating of sediments in conjunction with mapping of dinoflagellate cysts, and laboratory experiments tracing the nuclear-tagged dinoflagellate toxins from producers to the rest of the ecosystem.

Her interdisciplinary research team has demonstrated that dinoflagellate blooms, many of which have negative ecological and economic impacts, are not necessarily results of eutrophication, thus disputing this previous, common belief. Innovative efforts to model tropical dinoflagellate blooms have shown how bio-chemical and physical forces operate in marine waters to produce nuisance phenomena that can affect complex webs of interactions. Such models

can be used as predictive tools for *Pyrodinium* blooms in tropical waters.

For her contributions towards the improvement of seaweed aquaculture and her studies on harmful algal blooms, she was given the *Hugh Greenwood Environmental Science Award* in 2002. In 2005, she was awarded the *First Outstanding Filipino Woman in Fisheries and Aquatic Resources Research* by DOST.

She is one of the editors of *Harmful Algae News* (a UNESCO publication) and is a member of the International Editorial Board of *Harmful Algae* (an Elsevier journal publication). In addition, Dr. Azanza is a reviewer of the following ISI journals: *Journal of Applied Phycology* (Kluwer Academic Publishers); *Botanica Marina* (WD de Gruyter, Inc.), *Journal of Shellfish Research* (The Sheridan Press) and *Hydrobiologia* (Kluwer Academic Publishers). She has been a scientific adviser of the International Foundation of Science (IFS – Sweden) since 1997 (and has been reviewing some research proposals for funding agencies here and abroad).

She was the Dean of the College of Science for 6 years. Tasked to uphold its long-term goal and implement programs to become a world-class center of excellence for advanced scientific education and research, she made sure that every entity of the College contributed to the advancement of science and technology in the Philippines through the education of high-caliber scientists, the acquisition of scientific and technological knowledge, and the provision of scientific and technical services.