

Information on Doctoral thesis of Fellows Pham Thi Thu Ha

1. Full name: Pham Thi Thu Ha
2. Gender: Female
3. Date of birth: 19/3/1977
4. Place of birth: Ha Noi
5. Admission decision number: 1991/SĐH, dated 22th November 2006 by President of Vietnam National University, Hanoi.
6. Changes in academic process: Decision No 3521/QĐ-ĐT on 19th October, 2012 of Vietnam National University on giving permission to pause the study for a period of 12 months from the 01/09/2012; Decision No 3008/ĐHQGHN-ĐT on 29th August, 2013 of Vietnam National University on allowing continuing the learning program from 09/01/2013.
7. Official thesis title: Researching, assessing acid deposition in the Vietnam's Red river delta region
8. Major: Environment and Sustainable Development
9. Code: Pilot education program
10. Supervisors: Assoc. Prof. Dr. Hoang Xuan Co - VNU University of Science, Vietnam National University, Hanoi.
Prof. Dr. Le Trong Cuc - Center for Natural Resources and Environmental Studies, Vietnam National University, Hanoi.
11. Summary of new findings of the thesis:

The thesis analyzed and evaluated systematically the current state and the load of acid deposition in the study area during the period of 7 consecutive years (from 2006 - 2012).

This is the first scientific research in the country assessing the effects of wet deposition (acid rain) on bean plant, contributing to additional theoretical basis for the relationship between the effects of acid rain on the growth, the development of agricultural crops and changes on some chemical properties of soil.

The thesis proposed some solutions contributing to the control of acid deposition in the study area by: a) considering the applicability of the model Rains - Asia 7.52.2 in evaluating and forecasting emission level, the cost of SO₂ emission, SO₂ deposition amount and the percentage of affected ecosystems in the Vietnam's Red river delta; b) establishing the software for database management and the assessment of

acid deposition status in the study area; c) proposing some solutions for the control of gases emissions causing acid deposition.

12. Practical applicability:

The research results will be references for the agencies of environmental management, policy makers, and environmental scientists, ...in controlling the emissions of gases causing acid deposition and the effects of acid deposition on ecosystems in the study area, which will contribute to reduce the processing cost of the damage caused by acid deposition on the environment, as well as proposing appropriate solutions to increase crop yields. In particular, the software for database management and assessment of acid deposition in Vietnam's Red river delta built having an effective role in the assessment of changes, which support for giving the relevant policy decisions to reduce the phenomenon and consequences. The software can also be used to build databases for other research areas. The thesis is also the reference for further research on acid deposition.

13. Further research directions:

It is necessary to conduct more in-depth studies on acid deposition such as the effects of acid deposition on the opencast construction, on the ecosystem, especially agricultural ecosystems and public health. This will be basis for forecasting and proposing mitigation measures, contributing to environmental protection strategies and sustainable development of the country.

The software for database management and assessment of acid deposition in Vietnam's Red river delta can be used to extend to many other areas in the country. In addition, the software can also be upgraded to extend the functionality which connects to the sensors to measure pH, rainfall for tracking and monitoring automated online measurement at the monitoring points in the study area. It opens a follow -up study of the subject.

14. Thesis related publications:

Pham Thi Thu Ha (2006), "Effects of acid rain on the erosion of materials and architectural works", *Proceedings of scientific conference: Researching the technology of alloy bronze manufacture having high corrosion durability for the building and restoration of monuments in Hanoi*, Hanoi metallurgical cast Association, pp. 23-32.

Pham Thi Thu Ha (2008), "Initial assessment on acid deposition in Ha Noi and Hoa Binh", *Journal of Science*, Vietnam National University, Hanoi, Vol.24 (1S), pp. 49-55.

Pham Thi Thu Ha (2008), "Assess the state of wet acid deposition in Hanoi", *Proceedings of scientific conference: Maintaining and improving air quality in Vietnam (Second)*, AIRPET project and Swiss – Vietnam clean air program (SVCAP), Hanoi, pp. 150-158.

Pham Thi Viet Anh, Hoang Xuan Co, **Pham Thi Thu Ha**, Can Anh Tuan (2010), "Study on the application of ISC 3 model in the assessment of air pollution emitted from industrial sources for Hanoi area", *Journal of Science*, Vietnam National University, Hanoi, Vol.26 (5S), pp. 673-677.

Pham Thi Thu Ha, Pham Thi Viet Anh, Can Anh Tuan (2010), "Assessment of acid rain state in some areas belonging to the Northern key economic region in Vietnam (Hanoi, Hai Phong, Hai Duong, Quang Ninh)", *Journal of Science*, Vietnam National University, Hanoi, Vol.26 (5S), pp. 710 - 718.

Pham Thi Thu Ha, Hoang Xuan Co, Pham Thi Viet Anh (2010), "Comparing the amount of pre - acid substance emission and a total of acid deposition in Hanoi", *Journal of Science*, Vietnam National University, Hanoi, Vol.26 (5S), pp. 719-724.

Pham Thi Thu Ha, Pham Thi Viet Anh, Tran Thi Nga, Nguyen Thi Hien (2011), "Assessment of acid rain status in Ninh Binh", *Journal of Science*, Vietnam National University, Hanoi, Vol.27 (5S), pp. 45-52.

Pham Thi Thu Ha, Tran Thi Nga (2011), "Assessment of acid deposition amount in some areas belonging to the Vietnam's Red delta river (Ha Noi, Hai Duong, Hai Phong, Ninh Binh)", *Journal of Science*, Vietnam National University, Hanoi, Vol.27 (5S), pp. 53-60.

Can Anh Tuan, Hoang Xuan Co, Pham Thi Viet Anh, **Pham Thi Thu Ha** (2011), "The problems of damages and compensation for damages caused by air pollution", *Journal of Environment*, Ministry of Natural Resources and Environment (9), pp. 48-52.

Pham Thi Thu Ha, Le Trong Cuc, Do Thi Ngoc Anh (2012), "Studying the effects of simulated acid rain on the intensity of photosynthesis, chlorophyll content, and transpiration intensity of bean plants (*Phaseolus vulgaris* L.) in Hai Duong province", *Journal of Science*, Vietnam National University, Hanoi, Vol.28 (4S), pp. 45-52.

Pham Thi Thu Ha, Hoang Xuan Co, Pham Thi Viet Anh (2013), "Establishing the software for database management and assessment of acid deposition in Vietnam's Red river delta", *Journal of Science*, Vietnam National University, Hanoi, Vol.29 (3S), pp. 56-62.

Pham Thi Thu Ha, Le Trong Cuc, Do Thi Ngoc Anh (2013), "Effects of simulated acid rain on the growth of bean plants (*Phaseolus vulgaris* L.) in Hai Duong province", *Journal of Science*, Vietnam National University, Hanoi, Vol.29 (3S), pp. 69-74.