Organic agriculture education in Thai Universities: National trends and student perceptions

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Abstract. Since the 1950s Green Revolution “conventional” agrochemical-dependent farming has grown substantially in Thailand. Adverse impacts have been natural resources depletion, environmental pollution, deforestation, food contamination and public health concerns. Thai higher education institutions (HEIs) have contributed to problems, promoting agrochemical-dependent farming with limited attention to organic agriculture (OA). Our paper examines how Thai HEIs incorporate OA into curricula and extension services, and how students perceive the value and adequacy of OA courses and training. It reviews policy and syllabus documents among 49 HEIs. Our analysis suggests most universities still do not view OA as a priority. Second, we examine student and graduate perceptions to illustrate national challenges. A survey of senior undergraduate students and recent alumni in one HEI showed both groups believed they did not have sufficient lectures or courses in OA or adequate resources and training to pursue an OA-related career after graduation. Current students viewed inadequacies even greater. Our conclusions suggest Thai HEIs must do more to reform programs, improve OA curricula and better support graduates. More research is needed to gather detailed and refined information from university agriculture education program administrators and documents with more qualitative and quantitative data on students from other Thai Universities.

1. Introduction
Since the 1950s Green Revolution “conventional” agrochemical-dependent farming has grown substantially in Thailand making it one of the top five Asian countries in annual use of pesticides per unit area. Applications of fertilizers, herbicides, fungicides and other agrochemicals have also significantly increased. Adverse impacts have been natural resources depletion, environmental pollution, deforestation, food and water contamination and public health concerns. Nonetheless, agriculture is important to Thai culture and society and the national economy (around 9 to 11 percent of GDP) with at least 38% of the population engaged in the agriculture sector and although numbers of organic producers have increased over the past decade alongside participatory guarantee systems (PGS) or certified organic production and sales, the majority of Thai farmers still mostly do conventional agriculture [1, 2].

Research on how higher education in Thailand deters or advances sustainable agriculture (SA) is limited and although Thai higher education institutions (HEIs) have promoted mostly agrochemical-dependent farming for over a half century, in the past decade or so, some have paid more attention to organic agriculture (OA) [3]. However, HEI roles particularly in OA teaching, research and extension deserve more study [4, 5, 6]. This paper addresses some knowledge gaps about OA education in Thai
Universities. The objectives are to study and review the trend of incorporating OA into courses and curricula as well as extension services programs of Thai HEIs and to investigate students’ perception on the value and adequacy of OA course and training offered in one Thai HEI, Chulalongkorn University.

1.1. Background to this study
To date little published research has documented or analyzed OA education in Thai Universities. Publications also appear lacking in reports of surveys or evaluations of Thai post-secondary student attitudes on OA education, although a more comprehensive literature review of Thai and English sources is needed. To begin this paper attempts to address OA education as a poorly researched problem and introduce some preliminary national data from Thailand to illustrate. It reports results from a review of publicly available curriculum materials during January, February and June 2017. Data comes from around 50 university reports and websites mostly in the Thai language. The paper also summarizes results of a survey of senior students and graduates from one university to illustrate broader issues.

Some of the research themes for this paper grew from a series of discussions with Thai University partners in 2015-2016 funded by the Swedish International Agricultural Network Initiative (SIANI) which supported an “Expert Group on Higher Education for Sustainable Agriculture (HESA) in Southeast Asia.” HESA was a small research and policy dialogue project based at Chulalongkorn University School of Agricultural Resources (CUSAR). One output included a Thai Policy Brief which pointed out some gaps in OA education and research in universities [7]. In mid-2016 we began another study funded by the UNISEARCH office of CU about University-based Agriculture Extension services in Southeast Asia, and how they contributed to OA and agro-ecology. Those findings are preliminary, but already suggestive. The Thai case points to a significant lack of university-based extension services supporting OA [8]. Another project, a desk-study, reviewed policies, curricula and extension services of the nine government-designated national research university (NRU) to examine their attention to sustainable agriculture (SA) education. It found that SA was poorly taught, studied or practiced (with OA even less) in most elite universities. This was despite agriculture’s importance to the Thai economy and society and national policies ostensibly supporting sustainable development generally [5]. In addition, as we argue elsewhere, Thai HEIs do not appear to be actively or strategically contributing to OA mainstreaming or up-scaling in Thailand [4].

1.2. Current study overview and results
There are more than 120 HEIs in Thailand. New research for this paper reviewed publicly available data on OA among the 49 HEIs of these 120 universities (mainly universities or degree granting institutes) of Thailand which have agriculture-related programs or courses. We combined this new data with other information collected earlier on extension services of Thai universities drawing from a few available secondary literatures, but largely various websites and policy or curriculum documents, many in the Thai language [6]. Table 1 below summarizes the basic data for the present paper in three columns then compares results. The first column shows numbers of Thai HEIs which have extension programs to serve farmers. The second column shows which HEIs have organic agriculture courses. The third column shows which HEIs have full OA programs.

| No. | Name of Thai HEI with Agriculture Courses or Programs | HEIs with Agricultural Extension Departments or Programs | Organic Agriculture Course | Organic Agriculture Program |
|-----|------------------------------------------------------|--------------------------------------------------------|---------------------------|------------------------------|
| 1   | Bansomdejchaopraya Rajabhat University                | No                                                     | YES                       | No                           |

Table 1: Higher Education Institutions (HEIs) with Agricultural Extension Departments and Organic Agriculture Programs or Courses in Thailand [6].
| HEIs with Agricultural Extension Departments or Programs (Total of 6 HEIs) | HEIs without Agricultural Extension Departments or Programs (Total of 43 HEIs) |
|---|---|
| Organic Agriculture Course | Organic Agriculture Program | None | Organic Agriculture Course | Organic Agriculture Program | None |
| 2 Burapha University | No | No | 3 Buriram Rajabhat University | No | No |
| 4 Chandrakasem Rajabhat University | No | YES | 5 Chiangmai Rajabhat University | No | YES |
| 6 Chiangmai University | YES | No | 7 Chulalongkorn University | No | YES |
| 8 Kasetsart University | YES | YES | 9 Kasetsart University | YES | NO |
| 10 KhonKaen University | YES | YES | 11 King Mongkut’s Institute of Technology | No | YES |
| (with university degrees) | | | | | No |
| 12 Lampang Rajabhat University | No | YES | 13 Maejo University | YES | YES |
| 14 Mahasarakham Rajabhat University | NO | NO | 15 Mahasarakham University | NO | YES |
| 16 Mahidol University | NO | YES | 17 Nakon Phanom University | NO | NO |
| 18 Nakorn Sawan Rajabhat University | NO | YES | 19 Nakorn Si Thammarat Rajabhat University | NO | YES |
| 21 Naresuan University | NO | YES | 22 Panyapiwat Inst of Management (w degrees) | NO | NO |
| 23 Phetchaburi Rajabhat University | NO | NO | 24 Phetchabun Rajabhat University | NO | NO |
| 25 Phuket Rajabhat University | NO | YES | 26 Pibulsongkram Rajabhat University | NO | YES |
| 27 Prince Songkla University | YES | YES | 28 Ramkhamhaeng University | NO | YES |
| 29 Rajamangala University of Technology | NO | YES | 30 Rajamangala University of Technology Lanna | NO | NO |
| Thanyaburi | | | 31 RambhaiBarni Rajabhat University | NO | YES |
| 32 Rajamangala University of Technology Srinivaya | NO | NO | 33 Rajamangala University of Technology Tawan-ok | NO | NO |
| 34 Rajamangala University of Technology Suvarnabhumi | NO | YES | 35 Rangsit University | NO | YES |
| 36 Sakon Nakon Rajabhat University | NO | NO | 37 Silpakorn University | NO | NO |
| 38 Songkla Rajabhat University | NO | NO | 39 SukhothaiThammathirat Open University | YES | NO |
| 40 Suranaree University | NO | NO | 41 Thaksin University | NO | NO |
| 42 Thammasat University | NO | YES | 43 UbonRatchathani Rajabhat University | NO | NO |
| 44 UbonRatchathani University | NO | NO | 45 University of Phayao | NO | NO |
| 46 Uttaradit Rajabhat University | NO | NO | 47 ValayaAlongkorn Rajabhat University | NO | YES |
| 48 Walailak University | NO | YES | 49 Yala Rajabhat University | NO | YES |

Table 2. Higher Education Institutions (HEIs) with and without Agricultural Extension Departments with Organic Agriculture Programs or Courses.
2. Results, Explanation, and Analysis

Table 1 above lists HEIs (mainly universities and institutes), showing which currently offer courses or programs on OA, and have agriculture extension departments. The Table shows that 26 out of 49 universities did offer one or more course(s) and teaching on OA topics, whereas only one HEI, Thammasat University in Bangkok, offers a full Master Program on organic farming management. Another, Maejo University (MJU) in Chiang Mai, also has an explicit aim and even a strategic “roadmap” to become a leading university in organic agriculture in 2017 [7]. As such we included MJU with a YES in column three. We also found that a number of OA programs, workshops and training courses may also be available in community colleges and at non-formal education levels, but did not assess those for this paper. In addition, OA study could also be offered as a diploma and certificate course or associate program rather than as a degree program. But many HEIs do not have easily accessible data on available OA courses or related subjects and programs if they exist. So further, research is needed to better document and assess our initial review and impressions, quantitatively and qualitatively. Moreover, some programs and curricula seem to use the term ‘sustainable agriculture’ (SA) instead of organic agriculture or farming. Within such SA programs or courses some may already have or could add OA content to still be incorporated into other existing agriculture, courses, lectures and subjects.

Table 2 compares HEIs with and without agricultural extension departments. The data shows that a small majority of Thai HEIs tended to offered OA courses (66.7% and 51.2% respectively). The possible reasons for this could be a lack of resources and experts as well as number of student’ enrollment, therefore, most OA contents were incorporated into existing subjects or courses rather than one single course. This issue was discussed in [6]. But more data and research are required.

However, based on our initial review of available documents the number or availability of agricultural extension departments and organic courses or programs seems to share a common characteristic. That is, most agricultural HEIs did not view either university farmer extension as important, or OA in particular, as a teaching or public service priority. At the same time, finally, it is worth noting that there could be future demand for knowledge about sustainable agriculture amid more widespread recent discussion of Thailand’s unique Sufficiency Economy Philosophy (SEP) pioneered by the Late King His Majesty King Bhumibol Adulyadej, and in the wake of his death in 2016. The Thai government is promoting UN Sustainable Development Goals (SDGs) linked to the SEP, which particularly supports organic agriculture, among other approaches [9]. As such strengthened SEP ideas or policies could afford a possibility or new incentive for Thai HEIs to offer OA courses or programs in the future. At the moment, however, SEP still appears to be more philosophy and theory than mainstreamed to actively promote OA learning, practice or extension services among Thai HEIs.

2.1. Student perceptions about OA Education (supplementary data)

Regarding our second body of data we examined Chulalongkorn University School of Agricultural Resources (CUSAR) student and graduate perceptions to illustrate broader challenges about OA education and learning in a specific case. CUSAR offers an undergraduate program in agricultural resource management. The program aims to support younger generation farmers with well-rounded knowledge ranging from farm production to marketing while promoting community agriculture and local agribusiness. Most students accepted to the program are required to have a farming background with at least one family member either engaging in agricultural activities or to be farmers themselves.

Our data comes from a survey of third and fourth year undergraduate students (84) and recent alumni (86) from CUSAR conducted in early 2017 through a closed-group Facebook message board in the Thai Language. This was a simple, voluntary Monkey Survey of senior CUSAR undergraduate
students (84) and recent alumni (86) with a total target group of 190. There were 41 respondents, 29 alumni and 12 students. When we asked alumni about whether they think the university had provided them enough programs and courses on organic agriculture or agroecology, over half (56%), said the university did not provide sufficient courses or program on OA organic and agroecology, whereas 37% did not agree. Moreover, a larger number (64%) of senior students thought CUSAR did not provide adequate subjects, courses and program on OA and agroecology. With respect to alumni perceptions about the adequacy of OA extension services or training to allow faculty and students to work with farmers they were evenly split, 50:50. However, alumni results were quite different from current students’ perceptions. Among senior students just 18% thought OA university farmer extension or training services was adequate, 55% did not agree (suggesting training and services were not adequate), while 27% said they were not sure.

In sum, results from our small CUSAR survey show both groups believed their academic program did not have sufficient lectures or courses in OA or provide adequate resources or training support to pursue an OA-related career or business after graduation or give good extension services to farmers. But current senior students appeared to believe OA education was more deficient than recent graduates. Moreover, alumni also pointed out that they needed more field practices in organic farming as well as community engagement to better work with local communities. Given the relatively small sample size to compare we cannot draw significant conclusions but alumni and student perception differences are clear.

3. Conclusion and Future Research Recommendations

With limited time and resources this study was conducted mainly as a desk review of public documents and websites supplemented by a survey of one institution and sub-group (senior students and graduates). However, so far it seems OA knowledge and practice gaps are clear as only one HEI has a complete OA course and program as well as its extension services department while very few have OA programs. But the majority of HEIs did offer OA courses. The reasons are not conclusive why most Thai HEIs have low numbers of OA programs but the lack of experts (faculty members) and other resources in each institution is a likely factor. But more data collection and analysis are needed to document and assess all 49 university programs and curricula, interview faculty and administrators and survey and analyze student perceptions nationally. In addition, the results of students’ perception showed that majority of students and graduates felt that their OA courses and training were not sufficient and this could reflect the students’ desire to have more knowledge and training in OA. This is a good sign to urge the institution to provide more courses, program and training in extension. However, we suggest some academic reforms in order to increase or improve OA courses and programs. We need to increase number of organic agriculture experts and academic staff in HEIs; enhance OA teaching, research and extension budgets with funding from government (which could be more strongly linked to Thailand’s SEP and gain more traction in honor of the Late King Bhumibol Adulyadej’s death); improve/revise Thai education policy requiring all HEIs which teach agriculture to offer more courses and program in organic study and related subjects in response to emerging consumer demand for OA products while recruiting more students; and conduct more in-depth institutional and comparative research on OA in Thai universities, colleges and extension programs including but not limited to student enrollments, teaching hours, curricular content, research budgets, perceptions, etc.

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