出國報告（出國類別：其他）

永續發展之有機農業研討會

（Seminar on Organic Farming for Sustainable Development）

出國報告

服務機關：行政院農業委員會台南區農業改良場

姓名職稱：宋一鑫　助理研究員

派赴國家：斯里蘭卡

報告日期：95 年 10 月 8 日

出國時間：民國 95 年 09 月 10 日至民國 95 年 09 月 16 日

赴斯里蘭卡參加「永續發展之有機農業」研討會報告

目　　次

系統識別號：C09502210

行政院及所屬各機關出國報告提要

計畫名稱：亞洲生產力組織 (APO) 舉辦「永續發展之有機農業研討會」
報告名稱：台灣的有機農業
計畫主辦機關：行政院農業委員會臺南區農業改良場
出國人員姓名：宋一鑫.....職稱：助理研究員　　官職等：薦任(派)
服務機關：行政院農業委員會臺南區農業改良場
服務單位：作物環境課　　E-MAIL 信箱：issung@mail.tndais.gov.tw
出國地區：斯里蘭卡　　參訪機關：　Asian Productivity Organization
出國類別：其他 (研討會)
出國期間：民國 95 年 09 月 10 日至民國 95 年 09 月 16 日
報告日期：民國 95 年 10 月 8 日
關鍵詞：有機農業，永續發展，農產品認證
專責人員姓名：侯惠珍.....專責人員電話：06-5912901 分機 119
報告內容摘要：

有機農業是亞太地區近年來農業成長重要趨勢，它利用農場內物質如動植物廢棄物，並排除化學物質的作物生產方式，以減少不可回復物質利用，提高產品市場價值，使消費者滿足與增加農民收益的雙贏策略。消費者對安全及健康觀念的關心，是近年來有機產品需求增加主因。認證機制是建立產品可信度及消費者信賴，國際上亦須建立協調的標準與認證程序來加速產品國際貿易與流通。企業投資設立有機農場，結合當地小農生產當地特有產品，並獲得國外有機認證出口，使斯里蘭卡企業與小農獲得雙贏。推廣有機農業配合觀光休閒可提昇旅遊服務品質及農民收益。各國家均希望公部門能持續支持此產業，提供各方面援助，以提高農民投入此項產業意願。國內農業生產技術與推行成果均較東亞及東南亞各國爲佳，推行制度與韓國相似度較高。目前國內認證制度無法管理進口有機產品，建議相關單位整合協調。有機產品認證系統與農產品可追溯系統是歐盟及日本有機規範重要一環，農委會的新農業運動宣言亦將此兩項納入重點實施項目。台灣有機農產品若以特有的農產品，結合農企業並取得國外認證，才可能打開外銷市場。

壹、研習目的

近年來亞太地區發展有機農業已成爲農業成長的一個重要趨勢，它是一個以減輕環境負擔與人類健康的農業及食物生產概念，以達到消費者滿足與增加農民收益的雙贏策略。有機農業的中心趨勢是有效的利用農場內或當地的物質如動植物廢棄物及碳素源，依生態多樣性來干擾有害生物的棲息地，並排除依賴化學合成物質的作物生產方式。依照此方式，農民有機會降低生產成本、減少不可回復物質的利用，並提高產品的市場價值。增加有機產品的生產，需要增加消費者對安全及健康觀念的關心，也就是這個概念，是成爲近年來有機產品的需求增加的主因。然而，有機產品需要由特色化、區域化的方式以達成提高產品價值的目的，並藉由消費者的信賴與忠誠來擴增它的市場需求。因此，一個可信賴的標準與認證機制必須適時的建立以維護產品的可信度及消費者的信賴。國際上亦必須建立一個協調的標準與認證程序來加速產品的國際性貿易與流通。有機農業已適用在各個氣候不同的環境中，對開發中國家而言，它貢獻了經濟上及生態上的永續發展成效，對已開發國家來說，它富裕了國家的農業發展。

中華民國（台灣）發展有機農業已超過二十年，從民間組織如宗教團體與環保團體，到政府部門目前愈來愈值重視此議題並積極拓展有機農業的生產面積與產品開發。台南區農業改良場轄區範圍遍及台灣西南部，橫跨台灣農業人口約三分之一的雲林、嘉義、台南等農業縣市，轄區內擁有重要的農業旗艦作物如芒果、蝴蝶蘭等。此外本場除平地生產大宗稻米、蔬菜及水果，山地農業如茶樹、果樹等均爲重要的農業產業。由於農業生產常以單一作物爲主，因此生物多樣性減少並容易增加病蟲害的發生。一但病蟲害發生後便難以防治，農民普遍認知便是使用農藥防治，因此有機農業推廣常面臨困難。但也因爲如此，從教育、推廣農民投入有機農業生產，若能成功應有助於減低轄區內生態影響、增加農民收入及永續農業的發展。因此，學習國外其他國家有機農業的發展有助於增加以後教育與推廣上的經驗累積。此外，透過本次會議，將台灣的有機農業發展成果與各國分享，並幫助鄰近的開發中國家發展有機農業，拓展國際視野及國際交流。

貳、行程紀要

本次「永續發展之有機農業研討會 (Seminar on Organic Farming for Sustainable Development)」自 95 年 9 月 11 至 9 月 15 日一共五天，於斯里蘭

卡可倫坡 Hotel Taj Samudra 舉行，活動內容包括資源報告簡報 (resource paper)、國情報告(country report) 、小組討論、實地觀摩及總結研討等計畫，詳細時程安排如下：

日期/時間	議題/活動
9 月 10 日 (星期日)	本日下午與台東場黃明得場長在高雄機場會合出發，於曼谷機場轉機，抵達斯里蘭卡後接機人員，將我們安全載到可倫坡的 Taj Hotel 住宿。
9 月 11 日 (星期一)	
8：30－09：00	報到登記，領取本次會議及學員資料
9：30－10：45	開幕儀式、會議流程解說、拍團體照 於 Taj 飯店側的研討室舉行開幕式，開幕致詞人員有斯里蘭卡農業發展部秘書 Mr. Tissa Warnasuriya，及亞洲生產力中心 (APO) 書記 Dr. Muhammad Saeed 及 APO 講師 Dr. Tej Partap 等，Dr. Saeed 並詳細說明本次會議議程與注意事項。其後由各國及當地參與學員自我介紹，會後與各國代表互相認識、交換名片及拍團體照等。
10：45－12：00	資源報告簡報-I 近來亞太地區有機農業發展現況:宣言、挑戰及機會 Dr. Tej Partap，國際有機農業競爭力中心 (ICCOA) 執行長 / 印度有機服務中心 (IFOAM) 經理
12：00－13：15	資源報告簡報-II 發展永續綠色供應鏈之中小企業之有機產品行銷市場:宣言、挑戰及策略 Mr. Ton van de Goor，荷蘭昇進食品服務公司執行長
13：15－14：15	午餐
14：15－15：30	資源報告簡報-III 簡單省效率的科技/小農夫生產信賴之有機產品的達成方法 Dr. D.B.T. Wijeratne，斯里蘭卡農業發展部研究發展中心執行長
15：30－16：00	休息、交流時間

16：00－17：15	資源報告簡報-IV 安全及滿足消費者的有機產品之標籤、品牌及包裝 Ms. Deepika Munaweera，斯里蘭卡標準局助理理事
19：00－21：00	斯里蘭卡農業發展部的歡迎晚宴
9 月 12 日 (星期二)	
8：30－09：45	資源報告簡報-V 有機產品之食品品質及安全標準:宣言及挑戰 Ms. Nayana Satharasinghe，斯里蘭卡標準局助理理事
9：45－10：15	休息、交流時間
10：15－11：30	資源報告簡報-VI 國際市場上較具競爭力的有機產品之可信賴的認證制度與追溯系統 Mr. Yutaka Maruyama，日本有機檢查協會 (JOIA) 主席
11：30－12：30	參與學員國家報告 台灣-I 台灣-II 韓國
12：30－13：30	午餐
13：30－15：30	參與學員國家報告 印度 印尼 伊朗 寮國
15：30－16：00	休息、交流時間
16：00－17：30	參與學員國家報告 馬來西亞 尼泊爾 菲律賓 孟加拉
9 月 13 日 (星期三)	
8：30－10：00	參與學員國家報告

	斯里蘭卡-I 斯里蘭卡-II 斯里蘭卡-III 越南
10：00－10：30	休息、交流時間
10：30－12：30	小組會議 Group-I 有機產品的生產 Group-II 有機產品的行銷
12：30－13：30	午餐
13：30－15：30	小組會議
15：30－16：00	休息、交流時間
16：00－17：30	小組會議
9 月 14 日 (星期四)	
7：30－12：00	出發，交通時間，前往 Maho
12：00－13：00	Maho，參觀有機腰果工廠
13：00－13：30	午餐
13：30－14：00	參觀有機農舍及農村環境
14：00－19：00	回程，交通時間，前往可倫坡
19：00－21：00	APO 辦理的告別晚宴
9 月 15 日 (星期五)	
8：30－09：30	小組會議輸出報告
09：30－10：15	由參與學員填表評價本次會議
10：15－10：30	休息、交流時間
10：30－12：00	會議總整理、結果討論
12：00－13：00	休息、交流時間
13：00－13：30	閉幕式

13：30－14：00	午餐
9 月 16 日 (星期六)	本日凌晨四時從 Taj 飯店出發，中午抵達曼谷機場，等了六小時的轉接班機後，傍晚搭上華航班機，於晚間十一時左右安全抵達高雄機場。

參、主要議題及重点

一、 斯里蘭卡簡介

斯里蘭卡爲一鄰近印度的島國，最長之長度約有 432 公里、最長之寬度約 224 公里，面積 65,610 平方公里，約爲台灣的二倍。周圍海域爲印度洋，最高的山脈爲 2,524 公尺。雖然斯里蘭卡鄰近赤道，但令人異想不到的是其氣候卻比台灣涼爽，年雨量約爲 1,706 mm，平地高低溫爲 24°C ~ 32°C，高原區域高低溫爲 17°C ~ 26°C。其人口數約爲一千九百萬人，斯里蘭卡是一多種族國家，仍以 Singhalese 人 (82%) 爲主，宗教信仰以佛教 (77%) 爲大宗，但印度、依斯蘭、基督等其他宗教也各佔 7%左右。本地人雖以當地語言爲主，但都市一般商店從業員均能以英文溝通無礙。人民從事農業約佔 31.7%、工業 24.5%、服務業 44.8%。

二、 課程及上課地點安排

本次「永續發展之有機農業研討會」由斯里蘭卡農業發展部及 APO 承辦，住宿及上課地點均在斯里蘭卡 Taj Sumadra 飯店舉行。Taj Sumadra 飯店位於可倫坡市區，飯店正門隔一條街道便爲印度洋，上課地點在飯店側一個研討室內舉行，參加的與會人員有會議主持人 APO 書記 Muhammad Saeed 博士、講師 6 人及來自 13 個國家，共 21 位學員等。

本次研討會包含簡報與討論資源報告、國家報告、小組討論及野外實地參訪等內容。資源報告將討論有機農業發展現況，如主要宣言、推行有機農業之障礙及各地區推行有機農業之策略等議題。資源報告將以概觀性、know how 及重點討論之方式在會議期間呈現。國家報告由各參與會員國輪流上台報告國家推行有機農業之現況與發展，主要著重在宣言、推行有機農業之障礙及策略、以及提供一至二個成功經驗與各國

分享。小組討論主要分享各會員國推行之有機農業優勢與劣勢，並制定未來推行有機農業之行動方針。野外參訪提供參與學員體驗主辦國家有機農業之施行狀況，及提供各國間比較學習之機會。

三、 資源報告議題：共分成六大議題，內容如下

1. 近來亞太地區有機農業發展現況，宣言、挑戰及機會 (Dr. Tej Partap)：

有機農業在全球超過 100 個國家正在快速的推展，2005 年的統計年成長率約 15%，超過 2 千 6 百萬公頃的農地，55 萬 8 千 5 百位農民施行有機農業，亞太地區多數都是小農制，但有機農業正快速的成長，日本、印度、印尼是重要的有機生產國，而中國是重要的有機出口國，亞太地區超過 73 萬 6 千公頃的農地施行有機農業，各國政府正逐漸的制定規範來建立認證體系去加入國際的體制，目前僅有日本、印度、韓國、台灣、泰國有自己的認證體系。印度首先建立與歐盟、美國、瑞士相同的有機規範，亞洲有機產品的市場在 2003 年有 4 億 8 千萬美元，日本是最重要的約有 3 億美元的市場。然而日本農業規範 (JAS) 只允許其驗證通過的機構進口有機產品，因此許多國家失去日本市場。馬來西亞、菲律賓、印尼、印度、新加坡、泰國及非會員國中國有機產品均有高度成長，而影響有機產品的市場有價格及消費者的教育與認知等因素。

2. 發展永續綠色供應鏈之中小企業之有機產品行銷市場，宣言、挑戰及策略 (Mr. Ton van de Goor)：

荷蘭在 2005 年時有 8 萬 1 千 840 間農業公司，總計有 1 百 94 萬 9 千公頃的農地，有機農場佔地 4 萬 8 千 765 公頃，約爲總農地的 2.5%。有機產品包括馬鈴薯、水果、蔬菜、穀物、牧草、其他等，總值約爲 24 億歐元，共區分爲小賣事業及 (64%) 及食品服務 (36%) 。消費者消耗有機產品 4 億 6 千 7 百萬歐元，約爲總食品量的 2%，如牛奶、優格、肉品、乳製品及蛋等，銷售管道非常多樣化，過去 7 年間政府投資 3 億 4 千萬歐元在有機農業上，多數在稅率優惠等方案，並希望在此刺激下在 2007 年達到 5%的占有率。

3. 簡單省效率的科技/小農夫生產信賴之有機產品的達成方法 (Dr. D.B.T. Wijeratne)：

斯里蘭卡有超過 1 萬 5 千公頃的有機認証農地，約佔總農地面積的 0.65%，多數鄉村仍然有機農法耕種使用，私人企業也在鄉間推動種植有機產品如黑胡椒、肉桂、鳳梨、檸檬、芒果、椰子、草藥及腰果。並集合村民的收成品出口到國外，國外的企業不僅派人至當地村落認證，並延伸到各個小農，這個方式在這個國家使小農及國外的請託人獲得雙贏。這個國家的有機產品認證都是依照國外輸入國的標準建立，因此國外輸入國負擔許多投資並教育農民如何使用有機肥料。數項有機產品如水稻有數個品種，有機水果多爲乾燥加工品或灌裝果汁出口，香辛料作物多由小農生產，並受到各國的歡迎，肉桂是重要的輸出國，植物萃取物製成香水，椰子有機農法後對當地土壤、水文、動物等環境均有大的改善。轉換成有機茶初期兩年的收成減少但迅速恢復。NGO 及私人企業生產腰果，並已獲得有機認證，小農在農閒時亦生產 gotu-kola 及芒果增加收入，並藉由生產腰果所需的勞力使村民的工作機會及收入增加。斯里蘭卡有機農業爲小農制的鄉村傳統產品建立一個好的行銷契機。

4. 安全及滿足消費者的有機產品之標籤、品牌及包裝 (Ms. Deepika Munaweera)：

爲提供消費者優良的有機產品，標籤、品牌及包裝是非常重要的，重點在內容物標示、有效日期、使用方法、來源國家、營養，有機產品更注重於非基因及環境友善等訴求。FAO/WHO Codex 食品委員會已制定有機產品的規範，斯里蘭卡食品標示也於 2005 年制定相關規範。

5. 有機產品之食品品質及安全標準，宣言及挑戰 (Ms. Nayana Satharasinghe)：

斯里蘭卡的有機產品多爲外銷，國內的需求並不明顯，國內缺乏認證組織，認證組織全由輸出國引進的制度人力及相關資料，也因此國內的有機產品較鄰近的印度缺乏競爭力。政府尚未制定相關規

範管理有機產品，未來仍需要由國內專家所提供的科技、技術、教育等方面，並教育農民提升有機農業的競爭力。

6. 國際市場上較具競爭力的有機產品之可信賴的認證制度與追溯系統 (Mr. Yutaka Maruyama)：

日本境內規定貼上有機標籤的國內外產品皆須經過日本農業標準 JAS 的認證，日本的有機農法與國外的普遍認定的技術類似，但是光是這項農法仍無法滿足 JAS 的認定，因此必須加上可追溯系統。可追溯系統較早是 GAP 規範的內容之一，但有機產品近來也漸成爲必需的選項，考量目的、遠景、測定方法、成本等因素，滿足消費者仍以制定可追溯系統較好。作者提議兩大建議方案，一爲政府的支援方案，如研討會、經費支援等。另一爲民間成立的認證方案，政府的認證方案需合乎國際規範，可參考如 EU、NOP、JAS 等。

四、 國家報告

主要著重在宣言、推行有機農業之障礙及策略、以及提供一至二個成功經驗與各國分享。

孟加拉 (Mr. Abul Fazal Badrud-Doza) ：

孟加拉是個農業國家，1960 年代以前，農業型態是有機農業，推行有機農業主要的障礙是低產量、病蟲害管理、雜草、土壤營養肥力等。政府尚無任何推行有機農業的政策，成功案例在 M/s. Kazi 及 Kazi Tea Estate 等施行有機茶葉、藥用植物、牛奶、有機殺蟲劑等。

台灣 (Dr. Ming-Teh Huang) ：

小農可以生產有機產品較傳統農業產品獲得較高利益，農委會的有機農業農業發展政策中分成認證與驗證，目前有四個組織正在運作中，約有一千多公頃有機農地，座落於花蓮、台東、雲林、嘉義等 4 個主要有機米及蔬菜生產基地，另外國外進口的產品也非常多。長遠性的觀點在持續永續性發展，增加生產科技、技術、支援及認證是必要的。政府

的規範制定在管理、保護生產者及消費者，並減少假的有機產品充斥。政府教育農民之外，適當的支援有助於未來有機農業的發展。

台灣 (Dr. I-Hsin Sung) ：

至 2004 年台灣約有 1,250 公頃的有機農地，有機產品如米、蔬菜、水果、茶等。行銷管道多樣化，如專賣店、超市、餐廳、農會及網路商店等。從過去的有機農法、土壤與有機質肥料、微生物與非化學殺蟲劑的開發與研究，顯示台灣已經可以施行有機農業。政府制定有機農業政策及管理整個系統，而 4 個民間組織已展開有機農產的認證。未來有機農業面積的擴增、降低成本及規範的建立，有助於改善國內有機農業面臨的問題。

印度 (Dr. Akali Sema) ：

印度北部有極大的有機農業潛力，此地很少受到綠色革命的洗禮，因爲陡峭的地勢讓現代的科技緩慢的進入這塊處女地，農民使用傳統的農業技術。州政府已開始認證措施及市場規劃，數個州宣告有機化，政府政策是推行有機農地/作物之認證，拒絕非有機的物質輸入或病蟲害管理，本次報告著重在這些區域推行有機農業的策略與挑戰。

印尼 (Mr. I. Ketut Kariada) ：

印尼自從綠色革命之後已經很難發現施行傳統農法，因此地力衰退、病蟲害等問題應運而生，現代的技術認爲改變這些問題由施行有機農業是一個契機。政府與農民、地主諮商後決定發展有機農業，並從改善市場行銷機制，拓展農民團體與買者間更有效率的合約開始。主要的障礙在於農民、消費者、政府缺乏有機農業的優點的認知、無法預知的產量、如何達成經濟規模、缺乏市場資訊、極高認證成本等。

伊朗 (Dr. Gholamreza Chabokrow) ：

伊朗是一個相當乾燥、年雨量僅 250-300 mm 的國家，農業面積僅佔全國的 9%，主要以農藝與園藝作物爲主，有機農業約有 239,460 公頃 (佔全國的 1.6%) ，有機產品也是多樣化，一種棕梠科植物 (date) 與

無花果是當地較爲特殊的且大量的產物。當地農民可以半價購得殺蟲劑，因此政府已決定每年減少殺蟲劑的補貼，以減少殺蟲劑的使用。農民與政府對制定嚴格的有機農業認證制度仍抱持著低支持度，並希望以更寬鬆的制度來輔導這項邊緣化的產業，然而針對未來外銷產品，持續的加強輔導有助於該國有機農業產業的成長。

韓國(Dr. Eun-Mee Jeong) ：

韓國環境友善農業運動 (EF) 從 1970 年開始有機農業，EF 農業是韓國特殊的稱呼，爲的是減少環境的衝擊，EF 的政策是生產高品質的農產品如有機品，較傳統農業提高競爭力。政策著重在有機產品的認證、建立有效的規範、提出可能的支援、及五年內的 EF 農業方針。本報告著重在 EF 農業的社會經濟背景、農業政策及分析其特色，政策面上有社會運動 (有機農業之農民與消費者間的運動) 、社會經濟背景 (人民與外在農業政策環境的關聯) 及社會體系 (自治團體的更新及加強農業合作) 等。

寮國 (Mr. Khemphet Souksomvang) ：

寮國經濟主要 80%人口從事農業，近來有機農業結合農業生態旅遊讓遊客有極度的挑戰目標，政府制定有機農業，主要是針對輸出農產品，期望這個產業幫助社會經濟成長並永續發展。最近已開始展開一個稱爲 PROFIL 的有機農業的計畫，但目前推行有機農業仍面臨人力資源的缺乏及適當的領導，國家仍然缺乏推行有機農業的知識及技術，因此人力資源的需求非常重要。因輸出農產品，並有助國家經濟成長，它說服將有外匯輸入及 80%人口增加工作機會及收入。因此有助國家發展有機農業，尤其是幫助年輕人、女人的就業機會。在偏遠的鄉村及集合團體則有助於農民生活的改進及環境保護。

馬來西亞 (Mrs. Che An Binti Mohd. Jones 及 Mr. Ganisan Krishnen) ：

因爲當地需求及外銷輸出的機會，有機農業正快速成長，2001 年從 132 公頃成長到 2,006 年的 2,209 公頃。除少數企業是經營外，農民的農場規模也很小，約 1-3 公頃。大農場結合生態旅遊希望建立消費者認知興趣，並教育下一代。用遮雨棚及網室栽培的有機蔬菜可以有效

的防止蟲害及雨害。有機產品銷售管道爲專賣店或超市。各級政府機關及農企業 (MOA-ABI) 、農業部 (DOA)、馬來西亞農業研究及發展機構 (MARDI) 及農產行銷聯合事業局 (FAMA) 扮演推動有機農業重要角色，如認知課程、推廣工作、研究、刺激市場銷售、政策及有機標準及驗證。非政府機構 (NGO) 如 CETDEM、CAP 及其他組織也在國內推動有機農業，因爲政府與非政府機關的參與，及消費者有機產品的需求，馬來西亞有機產業前景一片看好。

尼泊爾 (Mr. Brajesh Nanda Vaidya) ：

在化學農藥與肥料輸入前該國農業活動都是屬於傳統的有機型態。近五年內，因化學原料輸入造成生物多樣性、土壤肥力的破壞。化學農藥與肥料使產量增加並使傳統有機農業式微，近來政府與非政府組織及私人團體推行有機農業，由生產/市場導向成爲更可行的方案，職業化的及組織化的模式已經小規模的開始施行，然而政府尚無具體行動方案，小農也發現它很難完全征服消費者市場。

尼泊爾 (Mr. Kishor Prasad Pant) ：

生態上的優勢使尼泊爾能發展有機農業的潛力，高原上的農夫生產的農產品不使用化學物質，因此尼泊爾有機會將農產品輸出國外全球化的有機市場。但因缺乏研究及推廣活動，現在的障礙來自缺乏產品及市場的資訊、人力資源短缺。主要宣言是產品認證、有機法律制定、政府的政策。政府的政策雖已推行，但並沒有針對有機農業制定完整及充足的方案，尼泊爾已經加入全球性的 WTO 貿易組織，並帶來國家許多貿易收入的契機。此外發展有機農業，尼泊爾需要增加有機產品標準化作業及認證系統，因此政府相關的措施與政策非常迫切的需要推動。

巴基斯坦 (Dr. Mumtaz Akhtar Cheema) ：

有機農業仍在幼年期，它雖然缺乏可信賴的資訊，但已經有數個私人團體正進行著，政府尚未開始推行有機農業計畫。化學物質減量對生態友善措施如使用 allelopathy 概念管理雜草、整合性蟲害管理、用生物防治防治棉花害蟲等。有機農產面積僅有 2 萬公頃，約爲總耕地面積之 0.07%。然而經由第三團體認證的有機產品並不存在，化學的肥料與殺

蟲劑在 Indus valley 的棉花生產仍在增加中。但許多高地仍不會使用化學殺蟲劑，一個成功的案例是在巴基斯坦北部的 Skardu (Baltistan) “Nauk Soq”的有機村，是由一個 Agha Khan Rural 協助介入這個計畫，他們組成有機村落，提供有機農業生產所需及技術支援，這個計畫仍在進行。由於巴基斯坦北部的特殊的氣候及地勢環境動植物相，有機農業結合農業旅遊在這邊具有極大的潛力，未來仍需要極大的努力。巴基斯坦農民生產有機產品供他們所需或輸出到中東及歐洲各國，未來巴基斯坦有機農業前景是光亮的但仍面臨許多挑戰。

菲律賓 (Dr. Francisco Babor Geromo) ：

菲律賓多數農民屬小農制，平均每位農民不及 5 公頃的農地，農民耕種多依賴小型農機具，1970 年代，該國開始依賴現代的化學農業生產技術，在 1980 年代以環保的緣由引進有機農業後，1986 年有機米變成一個重要的指標。現在，許多有機米的品種已經開始銷售國內市場，並逐漸擴增產量中。民間組織的運作比政府的推動來的快速且有效率，5 個機構已經加入國際性的組織中，如 ATC、MASIPAG、OCCP、OPTA、SAC 等，SAC 並已成爲的德國的 IFOAM 會員之一。

斯里蘭卡 (Mr. M.B. Dissanayake) ：

斯里蘭卡是世界上有機茶業、椰子、胡椒、薄荷、蔬果等輸出至日本及歐盟的主要國家。2003 年該國發覺有機農業及配合國際規範的重要性，並以 2 百 50 萬盧比的經費推行有機農產品的出口，2006 並以 2 千 5 百萬盧在有機水果與蔬菜上的改進措施，並且以 8 千 5 百萬盧在有機認證系統上的建立。農業發展部、農業出口部、椰子研究機構、茶葉研究機構等已開始展開有機農業的研究，對農民生產有許多幫助。認証系統也獲得 EU 的幫助，斯里蘭卡標準局發展適合當地有機產品的一些規範，農業部所展開的五年計畫，在推行當地的有機農業上應有相當的助益。

斯里蘭卡(Mrs. Shifaya Maraikar) ：

該國小農家的產品 90%都可認爲是有機的，在 Talawakalle 的私人企業茶葉研究機構裏已經進行 21 年的有機茶業生產研究。政府則加強

推行 12 種水果的科技發展，由 NGO 及私人企業在 Hambantota 區域生產的有機腰果專門出口，斯里蘭卡農業部亦曾發起一個有機農業運動政策 LOAM，並且經由國際組織 IFOAM 的認証。然而蔬菜及米的有機農法並不容易施行，因此以整合性病蟲害管理 (IPM) 及整合性營養管理 (IPNS) 較爲理想。

斯里蘭卡 (Mr. Jayasinghe LK Weeralal 及 Mr. Ransilu C. Watawala) ：

生產品質好、地區化及環境友善的農產品具有國際市場的競爭力，斯里蘭卡的農業出口部門 (DEA) 扮演一個重要的角色。這個部門在少數可施行的區域推展有機農業，主要以肉桂及胡椒。他們主要推行的方法有教育及技術、實作生產技術改進、有機肥料進口的補助、採後處裡的設備，雖然 2005 年生產 10 萬公斤的有機香辛料，但是尚未經過認證，另外的缺點是缺乏行銷管道。

越南 (Dr. Do Ngoc Diep) ：

越南有機農業的規範是保持生物多樣化、生物循環及土壤生物活力的生態管理生產系統。土地管理者了解利用環境友善的土壤的管理可保持產品的品質，但因動物廢棄物不足，因此結合有機及無機肥料的施行有助於這項產業的永續性發展。

五、 野外實地參訪

本次野外實地參訪參觀在 Maho 的腰果有機農場、小農家的房子與農園。距離可倫坡約 150 公里，單趟行程約 4 個半小時，Maho 是個乾燥的地方，適合腰果生產。在 1990 年以前，並未施行有機農法。自從 NASSA、SKAL 施行認證之後，此地結合 150 位小農家生產腰果，超過 500 個耕作地，此外，也生產如 gotu-kola、鳳梨、檸檬、芒果、椰子及草藥等其他有機產品。農場內雇用 70 位當地婦女負責腰果的製程。由於此地集合多數農戶生產有機產品外銷國外，這個方式在這個地區使小農及國外企業均獲利，並藉由生產腰果所需的勞力使村民的工作機會及收入增加。小農家的房子相當簡陋，農場內種植的作物並沒有整齊的規劃，但因爲保持了生物多樣性，因此農作生產也不需要施用農藥防治病蟲害。除了生產外，此地生活方式也是非常具有"有機"概念的，

當地人吃飯均是用最原始的方式以手代替筷子或湯匙，主辦單位此次在這裡也讓學員學習當地人的方式，以手吃飯的方式讓學員經歷了難忘的經驗。

六、 小組會議輸出成果

小組會議共區分兩個小組，討論生產與行銷議題，主要議題如下，討論的結果主要有生產技術的改進、降低成本、提昇有機產品的自給率、強化援助與教育與推廣、認證制度、政策的制定與管理、拓展行銷、消費者認知、產品特色化等，並舉出數個國家的實例來呈現本次會議的輸出，產出詳細結果內容請參閱附件三。

Group I 有機產品的生產：

1. 爲何亞洲區域必須施行有機農業
2. 宣言的認知
3. 施行有機農業與宣言的實際行動策略

Group-II 有機產品的行銷：

1. 地區
2. 宣言與行動
3. 實例

七、 會議結論與建議

會議結論：

1. 有機農業對企業及農民是個成長的機會。
2. 各個國家有不同的理由推行有機農業，但如果國家不推行有機農業，農產品將可能面臨許多問題。
3. 各個國家可參考日本、韓國、台灣、斯里蘭卡的經驗，推行有機農業技術與認證制度。
4. 政府的政策、支援，及其他像 NGO 的協助，教育與推廣工作仍有待加強。
5. 各國的規範與標準仍待協調。

會議建議：

1. APO 組織推動有機農業與企業發展的課程，讓會員國建立有機農業知識庫、人力資源發展、推動有機農業的策略及有機農業的組織訓練。
2. 經由日本、韓國及台灣推動有機農業等經驗，APO 協助開發中國家建立未來有機農業的推動及訓練方案。
3. 亞洲相關單位應建立一個經驗與知識的可交換平台。
4. 各國應有認知推行有機農業對維持小農生計、永續性的發展、環境保護及食物供應有極大助益。
5. 各國應開發人力資源及相關機構的建立以加強有機農業的研究與發展。
6. 非政府組織在推動有機農業非常積極，各國應建立夥伴關係以交換策略及推動有機農業。
7. 目前有機農業系統仍然有一些缺點，爲克服這些難題，政府應加強對有機農業的支援，來保護這個仍在成長的產業。
8. 有機農業仍在幼年期，各國的有機農業發展應同時建立國內的行銷市場及國外的貿易管道。
9. 各國的有機產品認證規範與標準仍待協調，降低認證成本的規範與標準亦同。

肆、心得與建議

一、 台灣消費者對有機產品認知度高，認證制度已開始展開，台灣農業生產技術與推行成果方面均較東南亞各國較佳，相關技術可考慮提供給東南亞開發中國家觀摩學習，以提昇台灣能見度與農業技術的國際交流。與各國比較後認爲台灣與韓國相似度較高，各國代表均對韓國的 EF 農業印象深刻，韓國的例子可值得成爲未來加以研究參考的對象。此外，與歐盟、日本相比，台灣的有機農業推廣仍有一些差距，我們雖已經建立認證制度，但相關措施只針對國內生鮮農產品，農委會相關規範無法管理進口有機農產品或進口有機加工食品，未來值得國內相關單位整合協調，將進口有機農產品及進口有機加工食品納入整個有機產品認證機制，使整個規範更加完善。

二、 參考歐盟及日本作法，有機產品的認證系統與農產品可追溯系統均是有機規範重要的一環，值得台灣學習，目前農委會實施的新農業運動宣言也將有機農業推廣與農產品可追溯系統納入重點實施項目，因此加強上述兩項措施可使台灣相關規範與已開發國家並行。

三、 斯里蘭卡氣候環境溫和，適合生產茶葉、蔬菜、芒果、椰子、腰果等作物，當地有機農產業由國外企業到當地投資設立有機農場，結合當地小農生產當地特有的有機產品，並且獲得國外有機認證機構的認可輸出至國外，不僅讓企業獲利，也能當地小農獲得工作機會。此種方式非常值得台灣有機生產單位學習。若能在台灣找到特有的農產品，結合農企業並取得國外如日本、歐盟等認證，台灣的有機農產品才有可能突破國內市場，外銷國外。

四、 少數國家推廣利用有機農業結合休閒觀光事業，在台灣也有類似有機村的作法，未來推廣有機產業可結合地方產業特色建立區域化農業體驗活動，配合觀光休閒來提昇旅遊服務品質及農民收益。

五、 各個國家對有機農業抱持樂觀態度，並希望政府單位能夠持續重視支持此一產業，提供更多的設備、技術及推廣方面的援助，以降低生產、認證上所需的成本，提高農民投入此項產業的意願，使環境的破壞降到更低，讓永續農業不單只是成爲口號。

六、 斯里蘭卡因爲反恐作爲，從機場到一般道路到處皆設有 Check point，軍警均荷槍實彈站崗檢查，增添不少緊張氣氛。但也可見到平民在深夜中在街上漫步，整體上治安應該還算不錯。當地國際機場規模極小，航廈內擠滿出入國的民眾，因此行程上必須提前安排妥當。此次初次造訪斯里蘭卡非常幸運的得與台東場黃明得場長共行，黃場長多年的豐富經驗除讓與會人士獲得深刻印象外，也告知許多出國需注意的事項。建議往後派訪此類開發中國家最好能結伴同行，遇當地人前來搭訕、邀約的情事均需小心，凡事以安全爲主。

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Country report

The Organic Farming in Taiwan

I-Hsin, Sung*

Summary

For sustainable agriculture, health, safety, nature and environmental protection are becoming more important to the producers and consumers in Taiwan. The government and citizens' groups promoted the organic farming since 1986. It was experimentally managed in 160 hectares in 1996, and increased the area to 1,250 hectares and to 953 farmers in 2004. The major organic farm products are rice, vegetables, fruits and tea, etc. These products are remarkable increasing the income of the farmers. The marketing channel of organic products is widely expanded and through many types, such as organic outlets, supermarkets, restaurants, agricultural collaboration companies and internet shops. Based on the practices and researches of the organic culture, soil and organic fertilizer, microbial control and non-chemical pest control, it is possible to execute and promote organic farming in Taiwan. So far, four civil organizations take charges of the verification and label issue of organic products, while the public agricultural administrations handle the policies and supervise this system. However, it has considered problems to promote the organic agro-business rapidly because of small production area, insufficient laws and skills of certification and high investments. In future, we hope to increase the area, decrease the cost, and strengthen the laws and ability of certification in civilian organizations.

Introduction

Taiwan (the Republic of China) lies on the western edge of the Pacific Ocean, and the Island is near to Japan, China, and the Philippines. The total area is about 36,000 km^2, which include 63.3% of forest in mountainous and hills. The available cultivated land in plain area is small, and the average farmland is only 1.16 hectares in each

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farming household (COA, 2005). It can be seen that the climates is tropical in southern counties, sub-tropical from mid to northern counties and temperate in high mountains. About 1-5 typhoons pass in summer and autumn season, and the winds and rainfall are the major damaging to the agriculture. Most of agricultural products have good qualities, such as rice, tropical fruits, vegetables and floricultures. Due to various pests and plant pathogens of crops, the chemical compounds are frequently used in the fields. Moreover, the consecutive farming methods are intensifying inferior to soil properties. Due to highly development of the industry and commercial activities in the cities, the Gross National Product (GNP) is reached to 15,690 US dollars (DGBAS, 2006). More and more people ask elaborate, high quality and safety foods for their health. According to COA (2006a), the organic farming is a sustained and cyclic managing system, with natural resources and prohibits any synthetic chemical substances to achieve the goal of natural and safe agricultural products. The organic farming products not only provide safe foods for the consumers but also increase the incomes of farmers (Huang-Tzeng and Fang, 2001). However, compare with the area to other countries, it is small and only 0.15% of total cultivated land (Wu, 2005).

This report is to introduce the feature, impediments, remedies and future aspect of the organic farming in Taiwan.

The feature of organic farming in Taiwan

The organic farming includes rice, vegetables, fruits, tea and others in Taiwan (Table 1). The citizens' groups firstly promoted it the plan since 1986. After that, the government enacted the standard of organic farming rule and holding 160 hectares of exhibition field in 1996. It increased the area to 1,246 hectares, and the product value was reached 15 million US dollars until 2004 (Table 1) (Wu, 2005). The rice is the major organic product and holds the largest area than other crops. It planted and spread quickly in the eastern plain where this area was superior of low pollution and good water quality. The vegetable includes many crops, such as cabbage, radish, carrot and corn, etc., and mainly cultivated in open farmland or in simple structure (Cheng *et al*., 1993; Wang *et al*., 1993a; Chen and Chang, 2001). The organic fruit contains lemons, strawberry, litchi, papaya, banana and pineapple, etc., together with tea and other crops (such as Bird's nest fern, water bamboo, green bamboo shoot, shiitake and coffee), these specialty products have higher competitive values than rice and vegetables.

Table 1. The area (in hectare) of the organic farming products from 1996 to 2005 in Taiwan (from Lin, 2003)

Year	Rice	Vegetable	Fruit	Tea	Others	Total	Growth rate (%)
1996	62	26	67	5	-	160	-
1997	238	43	100	16	-	397	59.7%
1998	302	98	156	22	-	578	31.3%
1999	466	170	157	22	5	820	29.5%
2000	596	154	209	37	17	1,013	19.1%
2001	493	171	159	56	19	898	-12.8%
2002	609	174	188	55	22	1,048	14.3%
2003	600	228	159	63	43	1,093	4.1%
2004	744	232	153	76	41	1,246	12.3%
2005	697	343	152	72	71	1,335	6.7%

The impediments and challenges in promoting organic farming

Soil problems and amendment

In Taiwan, about 740,000 hectares of soil are faced the following problems because of many reasons such as steep geographical features, rainfall flushes and pollutions: (1) strong acid soil, (2) lack of trace elements or nourishments, (3) erosive soil in steep slope, (4) high salty soil, (5) poor drainage in paddy field, (6) deep sand-soil, (7) tight-soil, (8) heavy metal pollution, (9) shortage of organic materials (Jiang *et al*., 2000). The organic fertilizer changes the soil property, provides nourishment and recycles the agricultural wastes, it is also friendly to the environment (Wang *et al*., 1993b). The kind organic fertilizers are divided as feces and urine, processed agricultural products, activated sludge, “bokashi” fertilizer, organic liquid fertilizer and compost (Jian, 1999). Although the agricultural waste had sufficient amount to transfer into organic fertilizer in Taiwan, it cannot be denied that the cost of organic fertilizer is too expensive. For example, to provide 150 kilograms of nitrogen fertilizer in a hectare should takes about 16,000 kg and 3,050 US dollars of organic fertilizer; however, the chemical fertilizer takes only about 3.6% - 4.8% to it (Huang, 2000). Because of the organic farming were prohibited any chemical compounds included in the CAS (Certified Agricultural Standards) organic system (COA, 2006a), the increased cost seemed an obstacle for this business. On the other hand, these regulations take the chances and challenges of organic farming in Taiwan. The government has promoted the plans such as rotation, set-aside and green manure to increase the soil capacity and

save the cost of fertilizer for years (Table 2). Moreover, the biological fertilizers such as *Rhizobium* and mycorrhizal have shown significant on plant growth, yield and quality (Table 3) (Teng and Huang, 1993; Wu and Lin, 1998; Lin, 1999). The most easy and laborsaving way is to encourage the farmers to utilize farm wastes, biofertilizer and green manure, thus increase the profit of organic production (Hsieh and Pai, 1993; Lin 2004).

Table 2. The regulation plan on rice paddy and fields for rotation, set-aside and cultivation of green manure in Taiwan from 2000 to 2004 (from AFA 2006)

Year	Rotation			Set-aside, cultivation of green manure		
	Plan area (ha)	Actual area (ha)	Achievement rate (%)	Plan area (ha)	Actual area (ha)	Achievement rate (%)
2000	76,135	52,479	68.9	99,524	129,509	130.1
2001	64,844	52,466	80.9	121,156	136,453	112.6
2002	58,020	53,930	93.0	177,220	167,205	94.3
2003	57,805	47,714	82.5	184,195	196,083	106.5
2004	56,610	41,519	73.3	230,790	239,724	103.9

Table 3. The area and profit of farmer's incomes on application of *Rhizobium* in soybean in Taiwan (modify from Lin, 1999)

Year	Inoculation area (ha)	The comparison of the profit on inoculation method to habitual fertilization (US $ / ha)	Gross profit after inoculation of *Rhizobium* (US dollars)
1988*	872	842	367,921
1989*	1,830	916	849,113
1990*	2,670	832	1,114,715
1991*	3,090	685	1,009,661
1992*	3,510	432	736,618
1993*	3,530	298	532,779
1994**	1,510	207	311,889
Total	17,012	-	4,922,696

*spring and autumn crops, ** spring crop

Control of the pests and pathogenic diseases in organic crops

To control the pests and pathogenic disease in organic crops, the researching groups had developed various methods as shown in Table 4 and 5. It is accepted by farmers that the net house or greenhouse have been increased the area in high values crops, and segregated mid to large size pests very effective (Chen and Chang, 2001). The pest depended on its host plant are mainly lepidoterean pests, aphids, whiteflies, thrips, mites, leafminers, oriental fruit flies and melon flies. The microbial, sex pheromone and plant extract oil together with traps are effective use in modern pest control (Kao, 1993; Hung and Hwang, 1993; Chen and Chang, 2001). To control the plant pathogenesis disease, any strategy to decrease the relationship of pathogen, host plant and environment would be possible (Cheng *et al*., 2005). As shown in table 5, a number of strategies such as crop resistance breeding, biological control and cultivation methods had developed in the integrated control program.

Table 4. Some non-chemical methods to control the pests in Taiwan (from Fang *et al*., 1993; Chen & Chang, 2001)

Pest category	Biological control	Cultural control	Physical control	NC pesticide*
Lepidoterean pests	*Bacillius thuringiensis, Beauveria bassiana, Metarhizium anisopliae,* Parasite wasps	Field hygiene, field inundation, segregation	Sex pheromone + trap	Azadirachtin (Neemix), wood vinegar
Aphid, whitefly		Field hygiene, rotation, fertilizer manage, segregation	Color sticker, silver reflection plastic belt, detergent	Azadirachtin, M-pede, wood vinegar
Thrips		Field hygiene, rotation	Color sticker	
Mites	Lady beetle, green lacewings, mite predator, stink bug, gall midge	Field hygiene, rotation		M-pede
Leafminers		Field hygiene	Color sticker	
Oriental fruit fly		Field hygiene, Fruit bagging	Food trap + sticker, Naled-intoxicated methyl eugenol** + trap	
Melon fly		Fruit bagging	Cuelure** + trap	

*Non-chemical pesticide, **the chemical materials were restricted in trap, and considered irrelevant to soil and crops

Table 5. Strategies for control the pathogenic diseases in Taiwan (from Cheng *et al*., 2005)

Item	Description	Target disease / purpose
Quarantine	Quarantine the seed, nursery, fruit, soil, fertilizer, meida, animal and human	e. g. nematode, sclerotial disease
Culture in facility	32 mesh net, PE plastic belt, anti UV plastic belt	Papaya ringspot virus, anthracnose, late blight, gummy stem blight, bacterium disease
Health plant species	Increase survival / growth rate	
Farmland plan	e.g. create protect area, facility size	
Rotation, irrigation	Decrease microbial survival rate	Nematode, decrease microbial density
Solar energe sterilize	Increase soil temperature, sterilize	Decrease microbial microbial survival rate
Nursery / plug seedling	Provide a virus free seeds	Virus free of green bamboo, yard long bean seed and orange nursery
Graft	e. g. graft watermelon on health bottle gourd stock	Fusarium wilt, tomato bacterial wilt, nematode
Field hygiene	Decrease microbial survival rate	
Fruit bagging	Prevent infection	Mango, Guava, bell fruit anthracnose, phytophthora blight, ripe rot
Water management	Prevent infection	
Pruning, proper interval of crops	Improve ventilation and daylight	Powdery midew, white rust, bacterial soft rot, damping-off
Grass culture	Grass culture under fruit trees	Phytophthora fruit brown rot
Fertilizer management	Improve the resistance of crops	Natural enemy of nematode, useful microorganism
Other	Caustic lime, calcium carbonate, slag, *Bacillus subtilis*, plant oil	Clubroot of Cruciferae, powdery mildew

There was a consider problem that the residual of chemical pesticides frequently detected in products from all of accredited organizations and other groups. It shows that the non-certificated products should be restrained in the market in order to avoid the system disorganization (Table 6). As mentioned above, the biodiversity is very complicate in Taiwan. When the population density of pests was getting up, the local farmers were insufficient confidence to control them by using non-chemical methods. Finally, with improper control method, the products will not pass the residual tests in the market, and after test. Recently, the government is trying to follow the international rules and create the history of product when production, and include in the organic CAS system (COA, 2006b).

Table 6. Monitoring on the residues of agricultural products from organic farming groups from May, 2004 to July, 2006 (from TACTRI, cited from TOAIC, 2006)

Year / Date	Item	COA org.*	Non-COA org.**	No accredited ***	Total
2004/5 - 2004/12	No. of tested	292	56	50	398
	Residue detectable rate (%)	8.9 %	8.9 %	16.0 %	9.8 %
2005/1 - 2005/12	No. of tested	435	86	72	593
	Residue detectable rate (%)	0.9 %	8.1 %	12.5 %	3.4 %
2006/1 - 2006/7	No. of tested	233	39	66	338
	Residue detectable rate (%)	0.9 %	0.0 %	6.1 %	1.8 %

* COA accredited organizations (MOA, TOPA, TOAF, FOA)
** Non-COA accredited organization (COAA)
*** No accredited groups, with organic labeling on products wrapping paper

Imported organic products and other obstacles

The imported products have grown up quickly in recent years. It reached to 30 million US dollars, and grew around 20 percent in 2005 (Biofach, 2006). The problem of imported products comes from the insufficient information from the country, e.g. wrong label and no certificated products. Moreover, it still lack the rule to check the foreign organic products while importing, and being a serious problem to safe guarantee and menace to native organic farming business now and in future (Chen, 2003, Wu, 2005).

In view of production, consumption and law, the organic markets also faced obstacles as following conditions in Taiwan: (1) the confidence of organic products is insufficient for the customers, (2) the natural condition of the climate and the soil is defective, (3) the standard of organic attestation is incomplete, (4) the mark of certified products are incomplete, (5) the certification members and mechanism is insufficient, (6) lack of expenditure of spread of organic farming, (7) customer's participation level is insufficient, (8) the farmer cannot offer the high cost of the attestation (Chen, 2003).

The government policy and issues of certification

Since the civil organizations promoted the plan of organic farming, Taiwan government cooperated from nearby positively. For example, held the science symposium, supported the research plans and on organic culture, soil inspection and plant protection (TOAIC, 2006). It was promoted the execution of organic standard in

rice, tea, vegetable and fruit, and extension fields in 131 hectares in 1996 (Lin, 2003). The “standard relating to the production of organic products”, “guidelines for accreditation of organic production organization” and “guidelines for setting up organic accreditation organizations” were announced and executed in 1999. The “application and work procedure for examining organic accreditation organizations” were held in next year. Based on these guidelines, it was re-announced and executed related guidelines in 2003. In 2006, the mark of CAS was standardized and united with other agricultural standards/rules, and then these guidelines were revised as “operating procedure of CAS maker certification and accreditation”, “CAS for organic agricultural products–crops”, “CAS for organic specifications and marker”, “CAS attachment of organic quality and marker” and ”operating procedure of CAS organic accreditation”. It allows a transition period for 2 years in short-term crops and 3 years for long-term crops (fruit and tea). Moreover, the organic system had been included the animal products. The Council of Agriculture (COA), Executive Yuan, which is the government agency and handle the regulations in Taiwan, had successfully accredited four citizen organizations for the organic accreditation and made it practically (Table 7). According to the guidelines, these organizations examined the organic products from production fields and markets. The trained inspectors of organization took charge of certify works in filed, and educated the farmers for a proper way of organic farming. The sample of products are monitoring in residue by TACTRI (Taiwan Agricultural Chemicals and Toxic Substances Research Institute) before send into market. If the products without pesticide and heavy mental reactions, it will issue of certification from the organizations. However, this system is still in an incomplete stage, the products from non-accreditation groups of COA and foreign organics are common seen in the markets, and need more regulations to control (Table 6) (Wu, 2005).

Table 7. Number of certificated farms / farmers in each crop category from the organizations in Taiwan (from Wu, 2005)

Association	Rice	Vegetable	Fruit	Tea	Other
MOA	118	104	38	27	0
FOA	3*	6/3*	2	0	1/3*
TOAF	20	65	46	7	26
TOPA**	-	-	-	-	-

* transition period; ** no data

The promotion in organic farming by religion and environmental protect groups

The Buddhism monks and the pious citizens are used to vegetarian diet, and abstain from fish and meat for their religion belief in Taiwan. Recently, the religion and environmental protect groups tried to tie the vegetable diet and organic safe food together; a healthy organic product related to the vegetable diet is taken advantage of the tendency and appears. The market of organic product related to the vegetable restaurants and shops are steadily grown up, and consent by young person, woman and businessmen. For example, Tse-Xin (TOAF) is a Buddhism members group composed in 1992 and they mostly lack of experience in traditional agriculture. However, their idea had been accepted and verified by COA. Moreover, they developed the market splendidly. An inspector should train in four days, learning lessons for the promotion, and passing the examination for his/her works. They made the contracts with organic farms in various places, and developed their own products in the farmlands from Taiwan Sugar Company. So far, it was over 150 kinds of vegetables and fruits belong to organic products from this group (Wu, 2005).

Multiple channels of marketing in organic farming

The farmers are mostly preferred their organic products by direct marketing because they obtained high price and benefit than using indirect way (Huang-Tzeng, 2000). A few numbers of organic products were sold from organic monopoly shops, vegetarian diet shops, organic restaurants, and supermarkets and sometimes from agriculture collaboration companies. The organic outlets are spread steadily and quickly; it estimated about 800 shops in 2005 (Wu, 2005). Furthermore, the internet business is booming, using the home delivering system, customer could buy organic products even in remote place (Huang-Tzeng, 2000).

Future prospects and conclusion

Although the organic farming has the customer market and opportunity in Taiwan, it still faced some problems and could not develop in large scales. In order to decrease the cost in production, it has to promote the research works in organic farming, especially in the development on crop resistance breeding, propagation of natural enemy, and development of microbial agent. Further, to improve the abilities and methods of certification in civilian organizations are necessary. Concern about the agriculture policy, the public agricultural administrations demonstrated a “new agriculture exercise” to reform the agricultural system (COA, 2006b). This exercise include at least two purposes related to organic farming, it announced that the organic farming area should be increased twice in 3 years. Moreover, the history of product on

production will go to enforcement before 2015, and provides a safety and health environment for producers and consumers.

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References

AFA. 2006. [The regulation plan on rice paddy and fields for rotation, set-aside and cultivation of green manure]. [Internet] Agriculture and Food Agency, Council of Agriculture, Executive Yuan, Taiwan. from: http://bulletin.coa.gov.tw/htmlarea_file/web_articles/3861/894_01.pdf [cited from August, 2006]

BioFach Newsletter. 2006. Taiwan: some 800 stores stock organic products. No.112. [Internet] BioFach, the World Organic Trade Fair, Nuremberg, Germany. from: http://www.biofach.de/main/d6rvc9vi/d6szfm8q/d6t1gupr/eilc7oom/page.html?referent=further+ [cited from August, 2006]

Chen, S. H. 2003. [The contemplation in implement the organic farming Part. 1 - development bottleneck]. Country Road 29: 20-23. (in Chinese)

Chen, W. S. and Chang, H. I. 2001. [Control technique of pests in organic vegetables]. Technical Report of the Tainan District Agricultural Research and Extension Station, Tainan, Taiwan. No.111. (in Chinese)

Cheng, A. H., Tu, T. E. and Liu, H. L. 1993. Control of vegetable disease in the production system under simple structure. In: Chen, C. N. *et al*., eds. pp. 211-225. The Plant Protection Society of the Republic of China, Special Publication New No. 1. Plant Protection Society of the Republic of China. (in Chinese)

Cheng, A. S. Chen, S. C., Wu, Y. F. and Peng, J. C. 2001. [Management technique of plant disease in organic crops]. Technical Report of the Tainan District Agricultural Research and Extension Station, Tainan, Taiwan. No.131. (in Chinese)

COA. 2005. Yearly Report of Taiwan's Agriculture. [Internet] Council of Agriculture, Executive Yuan, Taiwan. from: http://eng.coa.gov.tw/list.php?catid=8821 [cited from August, 2006]

COA. 2006a. Operating Guidelines for Management of Organic Agricultural Products. [Internet] Council of Agriculture, Executive Yuan, Taiwan. from:

http://www.afa.gov.tw/content_en.asp?pcatid=1&ycatid=1&lcatid=327&hcatid=329&sub=t [cited from August, 2006]

COA. 2006b. [New agriculture exercise]. [Internet] Council of Agriculture, Executive Yuan, Taiwan. from: http://www.coa.gov.tw/view.php?catid=3 [cited from August, 2006] (in Chinese)

DGBAS. 2006. Quartetly National Economic Trends. [Internet] DirexTorate-General of Budget, Accounting and Statistics, Executive Yuan, Taiwan. from: http://www.dgbas.gov.tw/ct.asp?xItem=15609&ctNode=3572 [cited from August, 2006] (in Chinese)

Fang, M. N., Liu, Y. C. and Tseng, S. Y. 1993. Non-chemical control of insect pests in vegetable crops. In: Huang, S. H., Hsieh, S. C. and Chen, C. C. eds. pp. 211-225. Sustainable Agriculture, Proceeding of a Symposium Held at Taichung District Agricultural Improvement Station, Taichung, Taiwan. (in Chinese)

Hsieh, C. F. and Pai, K. S. 1993. Organic farming of lowland rice at Tsautun. In: Huang, S. H., Hsieh, S. C. and Chen, C. C. eds. pp. 157-160. Sustainable Agriculture, Proceeding of a Symposium Held at Taichung District Agricultural Improvement Station, Taichung, Taiwan. (in Chinese)

Huang, B. N. 2000. [The meaning of organic fertilizer in ration fertilization]. In: Chen, W. S., Huang, S. N., Lin, C. Y and Lin, M. L. [Proceeding of a Symposium of Organic Fertilizer Application Technique]. Agricultural Research Institute, COA, Taichung, Taiwan. (in Chinese)

Huang-Tzeng, C. J. 2000. Evaluation of direct marketing of organic vegetables. Annual Journal of Agricultural Management 6: 52-68. (in Chinese)

Huang-Tzeng, C. J. and Fang, C. S. 2001. [Research on marketing channel and price of producer in organic vegetables]. Quarterly journal of agricultural marketing eng 123: 42-53. (in Chinese)

Hung, C. C. and Hwang, J. S. 1993. Application of sex pheromone in pest management. In: Huang, S. H., Hsieh, S. C. and Chen, C. C. eds. pp. 171-186. Sustainable Agriculture, Proceeding of a Symposium Held at Taichung District Agricultural Improvement Station, Taichung, Taiwan. (in Chinese)

Jian, S. Y. 1999. [Understanding the organic fertilizer and spread technique]. In: Chen, W. S. and Lin, C. Y. eds. The Technology of Crop Rationalize Fertilization in Sustainable Agriculture. Agricultural Research Institute, COA, Taichung, Taiwan. (in Chinese)

Jiang, S. S., Chen, W. S., Yeh, I. S., Chen, T. J., Chen, J. S., Ko, C. M., Lin, S. M., Yang, W. C., Chen, N. C., Lin, J. C., Chang, C. Y., Chuang, W. S., Yo, F. J., Wang, S. and Li, G. C. 2000. [Open the Veil of Formosa]. Counsil for Culture Affairs,

Taichung Office, Taichung, Taiwan. pp. 376 (in Chinese)

Kao, S. S. 1993. Microbial control of insect pests. In: Huang, S. H., Hsieh, S. C. and Chen, C. C. eds. pp. 201-210. Sustainable Agriculture, Proceeding of a Symposium Held at Taichung District Agricultural Improvement Station, Taichung, Taiwan. (in Chinese)

Li, S. J. 2002. [Discuss the organic food]. [Internet] Taiwan Food GMP Development Association. from: http://www.gmp.org.tw/helpdetail.asp?id=620 [cited from August, 2006] (in Chinese)

Lin, C. Y. 1999. [The development of sustainable agriculture in Taiwan]. In: Chen, W. S. and Lin, C. Y. eds. The Technology of Crop Rationalize Fertilization in Sustainable Agriculture. Agricultural Research Institute, COA, Taichung, Taiwan. (in Chinese)

Lin, C. C. 2003.[Introduce of the management standards in organic farming products]. Agricultural Administration and Affair 136: 10-12. (in Chinese)

Teng, Y. C. and Huang, B. E. 1993. Sustainable agriculture in Taiwan and its perspectives. In: Huang, S. H., Hsieh, S. C. and Chen, C. C. eds. pp. 1-8. Sustainable Agriculture, Proceeding of a Symposium Held at Taichung District Agricultural Improvement Station, Taichung, Taiwan. (in Chinese)

TOAIC. 2006. [Development of organic farming in Taiwan]. [Internet] Taiwan Organic Agriculture Information Center, COA, Taipei. from: http://organic.niu.edu.tw [cited from August, 2006] (in Chinese)

Wang, S. S., Ko, C. D. and Chen, W. S. 1993a. Control on insect pests of vegetables under pipehouse. In: Chen, C. N. *et al*., eds. pp. 209-219. The Plant Protection Society of the Republic of China, Special Publication New No. 1. Plant Protection Society of the Republic of China. (in Chinese)

Wang, Y. P., Chao C. C., and Huang S. N. 1993b. Effect of sustainable farming method on soil nutrient supply and soil properties. In: Huang, S. H., Hsieh, S. C. and Chen, C. C. eds. pp. 9-17. Sustainable Agriculture, Proceeding of a Symposium Held at Taichung District Agricultural Improvement Station, Taichung, Taiwan. (in Chinese)

Wu, C. G. and Lin, S. C. 1998. Technical Manual of Vesicular-arbuscular Mycorrhizal Fungi. Taiwan Agricultural Research Institute. pp. 232. (in Chinese)

Wu, T. J. 2005. [The Organic Farming in Taiwan]. Walkers Cultural Press, Taipei, Taiwan. 213 pp. (in Chinese)

Country report

The Organic Farming in Taiwan

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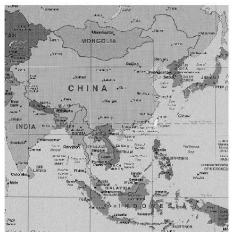
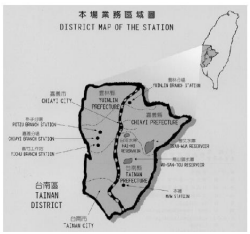
The geography and climates of Taiwan

- **Geography: an Island, and near to Japan, China, and the Philippines .**
- **Total area: 36,000 km^2, 63% are mountains and hills.**
- **Climate: tropical, sub-tropical and temperate.**
- **Typhoon: about 1-5, the winds and rainfall damaged the agriculture severely.**
- **Available cultivated land: 1.2 ha / per farming household.**

The research area of Tainan DARES





The agriculture products

- Most of agricultural products have good qualities, such as:
  - Rice:
  - Fruits:
  - Vegetables:
  - Floricultures:

Definition of organic farming in Taiwan

- Organic farming is a sustained and cyclic managing system, with natural resources and prohibits any synthetic chemical substances to achieve the goal of natural and safe agricultural products (from Council of Agriculture (COA), the public government agency)

The advantages of organic farming than traditional agriculture

- Safety and health products for consumers
- Increase income to farmers
- Decrease the amount of chemicals in fields and crops
- Retain the soil fertilize
- Environment friendly

The reason of boom in organic products

- Higher income of people: GNP is 15,690 US $.
- Fear of pesticide residues
- Fear of pollutions
- Health and disease
- Religion and environment groups

The organic products in Taiwan

- Rice: major organic product, mainly in the eastern plain of Taiwan
- Vegetables: such as cabbage, radish, carrot and corn, etc., and mainly cultivated in open farmland or in simple structure
- Fruits: lemons, strawberry, litchi, papaya, banana and pineapple, etc.,
- Tea: high mountain tea
- Others: bird's nest fern, water bamboo, green bamboo shoot, shiitake and coffee
- The organic fruit, tea and other crops have higher competitive values than rice and vegetables.

Table. The area of the organic farming products from 1996 to 2005

Year	Rice (ha)	Vegetable (ha)	Fruit (ha)	Tea (ha)	Others (ha)	Total (ha)	Growth rate (%)
1996	62	26	67	5	-	160	-
1997	238	43	100	16	-	397	59.7%
1998	302	98	156	22	-	578	31.3%
1999	466	170	157	22	5	820	29.5%
2000	596	154	209	37	17	1,013	19.1%
2001	493	171	159	56	19	898	-12.8%
2002	609	174	188	55	22	1,048	14.3%
2003	600	228	159	63	43	1,093	4.1%
2004	744	232	153	76	41	1,246	12.3%
2005	697	343	152	72	71	1,335	6.7%

from Lin, 2003

The impediments and challenges in promoting organic farming

- Soil problems and amendment
- Pests and pathogenic diseases control
- Imported organic products

Soil problems and amendment

- Soil amendment: to achieve the same effect of soil fertilizer as in chemical fertilization, the organic fertilizer takes high cost.
- The easiest and labor-saving way is to utilize farm wastes, biofertilizer and green manure from the fields.
- The government has promoted the plans such as rotation, set-aside and green manure to increase the soil capacity and save the cost of fertilizer for years.
- The biological fertilizers such as *Rhizobium* and mycorrhizal have shown significant on plant growth, yield and quality.

Table. The area and profit of farmer's incomes on application of *Rhizobium* in soybean

Year	Inoculation area (ha)	The comparison of the profit on inoculation method to habitual fertilization (US $ / ha)	Gross profit after inoculation of *Rhizobium* (US $)
1988*	872	+842	+367,921
1989*	1,830	+916	+849,113
1990*	2,670	+832	+1,114,715
1991*	3,090	+685	+1,009,661
1992*	3,510	+432	+736,618
1993*	3,530	+298	+532,779
1994**	1,510	+207	+311,889
Total	17,012	-	+4,922,696

*spring and autumn crops, ** spring crop

modify from Lin, 1999

Table. The regulation plan on rice paddy and fields for rotation, set-aside and cultivation of green manure from 2000 to 2004

	Rotation			Set-aside, cultivation of green manure		
Year	Plan area (ha)	Actual area (ha)	Achiev-ement rate (%)	Plan area (ha)	Actual area (ha)	Achieve-ment rate (%)
2000	76,135	52,479	68.9	99,524	129,509	130.1
2001	64,844	52,466	80.9	121,156	136,453	112.6
2002	58,020	53,930	93.0	177,220	167,205	94.3
2003	57,805	47,714	82.5	184,195	196,083	106.5
2004	56,610	41,519	73.3	230,790	239,724	103.9

from AFA 2006

Pest control

- The kind of pest: mainly lepidoterean insects, aphids, whiteflies, thrips, mites, leafminers, oriental fruit flies and melon flies.
- It is accepted by farmers that the net house or greenhouse have been increased the area in high values crops, and segregated mid to large size pests very effective.
- The microbial, sex pheromone and plant extract oil together with traps are effective use in modern pest control

Table . Some non-chemical methods to control the pests

Pest category	Biological control	Cultural control	Physical control	Non-chemical pesticide
Lepidotere-an insects	*Bacillius thuringiensis*, Parasite wasps	Field hygiene, field inundation	Sex pheromone + trap	Azadirachtin (Neemix), wood vinegar
Aphid, whitefly		Field hygiene, rotation, fertilizer manage	Color sticker, silver reflection plastic belt	Azadirachtin, M-pede, wood vinegar
Thrips		Field hygiene, rotation	Color sticker	
*The control methods of other pests skipped, see in the report				

(from Fang *et al*., 1993; Chen & Chang, 2001)


Fruit bagging


Sex pheromone + trap


Color sticker testing


Green house


Channel structure


Field inundation

Crop pathogenic diseases

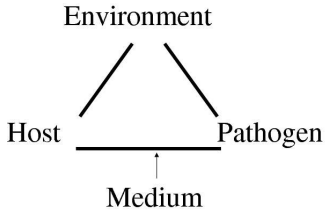


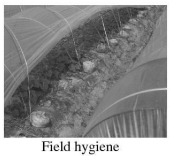
Table. Strategies for control the pathogenic diseases

Item	Description	Target disease / purpose
Quarantine	Quarantine the seed, nursery…	e. g. nematode, sclerotial disease
Culture in facility	32 mesh net, PE plastic belt…	Papaya ringspot virus, anthracnose…
Health plant species	Increase survival / growth rate	
Farmland plan	e.g. create protect area	
Rotation, irrigation	Decrease microbial survival rate	Nematode, decrease microbial density
Solar energe sterilize	Increase soil temperature, sterilize	Decrease microbial microbial survival rate
*The control strategies of other items skipped, see in the report		

from Cheng *et al*., 2005

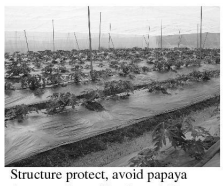
Virus free of green bamboo

Graft



Field hygiene

Fertilizer management



Structure protect, avoid papaya ringspot virus affect by aphid

Residual problems

- The local farmers were insufficient confidence to control the high density of pests by using non-chemical methods.
- The residuals frequently detected in products. The non-certificated products should be restrained in the market in order to avoid the system disorganization .
- COA is trying to follow the international rules and create the history of product when production, and include in the organic system.

Table. Monitoring on the residues of agricultural products from organic farming groups

Year / Date	Item	COA org.*	Non-COA org.**	No accredited ***	Total
2004/5 - 2004/12	No. of tested	292	56	50	398
	Residue detectable rate (%)	8.9 %	8.9 %	16.0 %	9.8 %
2005/1 - 2005/12	No. of tested	435	86	72	593
	Residue detectable rate (%)	0.9 %	8.1 %	12.5 %	3.4 %
2006/1 - 2006/7	No. of tested	233	39	66	338
	Residue detectable rate (%)	0.9 %	0.0 %	6.1 %	1.8 %

* COA accredited organizations (MOA, TOPA, TOAF, FOA)
** Non-COA accredited organization (COAA)
*** No accredited groups, with organic labeling on products wrapping paper

(from TACTRI, cited from TOAIC, 2006)

Imported organic products

- About 30 million US dollars, and grew around 20 percent (2005)
- The problem of imported products comes from the insufficient information such as wrong label or no certificated products → no guarantee and unsafe
- Menace the business of native organic farming

The government policy

- COA promoted the execution of organic standard and extension fields since 1996
- In 1999-2000, announced and executed related guidelines
- It was re-announced and executed related guidelines in 2003.
- In 2006, the mark of CAS was standardized and united with other agricultural standards/rules
- Transition period: 2 years in short-term crops and 3 years for long-term crops (fruit and tea)

The policy and issues of certification

- COA handle the regulations, and had successfully accredited 4 organizations.
- Residue test by TACTRI, COA
- If the products without pesticide reactions, it will issue of certification from the organizations.

The relationship of government, certification organization and consumer in organic system

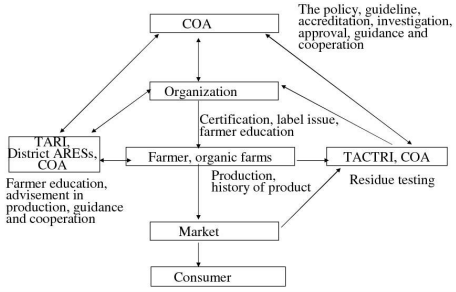


Table. Number of certificated farms / farmers in each crop category from the organizations in Taiwan

Organization	Rice	Vegetable	Fruit	Tea	Other
MOA	118	104	38	27	0
FOA	3*	6/3*	2	0	1/3*
TOAF	20	65	46	7	26

* transition period

from Wu, 2005

Multiple channels of marketing in organic farming

- Direct marketing (most preferable)
- Organic outlets, restaurants, supermarkets, agriculture collaboration companies.
- The organic outlets are about 800 shops in 2005.
- Internet shops and home delivering system, customer could buy organic products even in remote place.

Future prospects

- The development on crop resistance breeding, propagation of natural enemy, and development of microbial agent.
- Improve the abilities and methods of certification in organizations.
- The organic farming area will increase in near future, and the history of product on production become important to producers and consumers.

Thank you

Eluanbi, the southernmost of Taiwan

06-AG-GE-SEM-04-A 附件三

DRAFT

SEMINAR HIGHLIGHTS

INTRODUCTION

Seminar on Organic Farming for Sustainable Development was held from 11 to 15 September 2006 in Colombo, Sri Lanka. The five-day seminar was organized by the Asian Productivity Organization (APO) and implemented by the Ministry of Agricultural Development, and National Productivity Secretariat. Twenty-one participants from 13 member countries and six resource speakers from India, Japan, the Netherlands, and Sri lanka attended.

The objectives of seminar were: 1) to discuss recent achievements in organic farming with special focus on developing member countries; 2) to identify issues and problems in promoting organic farming for sustainable development; and 3) to suggest measures for further promoting organic farming in developing member countries.

The seminar started with the presentation of resource papers by selected experts who covered the following topics: 1) Organic farming in Asia and the Pacific region: issues, challenges and opportunities; 2) Organic farming as a tool for sustainable development (*This topic was presented as a part of the presentation #1 , but we would like to show it as a separate title for the sake of better highlighting the subject coverage if you agree*); 3) Organic market in the Netherlands; 4) Simple and cost-effective technologies/approaches for the production of authentic organic products by small farmers; 5) Labeling, branding, and packaging of organic products for food safety and consumer satisfaction; 6) Food quality and safety standards of organic products: issues and challenges; and 7) Development of reliable certification and traceability systems for better competitiveness of organic products in international markets. The resource-paper presentations were followed by country-paper presentations wherein the participants discussed recent status of organic farming in their respective countries, as well as issues and impediments in promoting organic farming. In group discussions the participants discussed in detail the issues and problems in promoting organic farming, and formulated strategic action plans to address them. The field visits were to Lanka Organics (Pvt) Ltd. and a small-sized organic field, both located in close proximity in Maho, Kurunagala District. The former is a Sri Lankan organic agriculture based company that has initiated an organic cashew cultivation program.

The following summary presents the highlights of the seminar.

RESOURCE PAPERS

Organic farming in Asia and the Pacific region: issues, challenges and opportunities (Dr. Tej Partap)

After discussing the definition and key concepts, as well as current status of organic farming in the Asia-Pacific, the paper provides insights into the issues and challenges in promoting production and marketing of organic agriculture in the region and suggests strategies to resolve them.

Organic agriculture has developed rapidly worldwide over the last few years and is now being practiced in over 100 countries of the world. During the recent years its share of organic farming in terms of agricultural land and farms is growing fast. If the share of uncertified organic production is also considered then certainly the share of organic is much higher. The available information up to 2005 indicated that organic farming was being done in over 26 million ha by about 558,500 farms world wide with annual growth of 15%.

In Asia and the Pacific region, the area under organic management is comparatively small, but rapidly increasing. Among the more significant countries producing organic products are India, Indonesia as well as Japan. China is a key player in Asia focusing mostly on enhancing organic exports. The total organic area in Asia is about 736,000 ha, even though it may be more than this because precise figures for many countries are not available. Asia also is reported to have large area of 2.9 million ha certified as wild harvest.

The first ever steps towards organic by most Asian countries has been on accessing certification facility either by setting their own regulations and agencies or through giving entry to international certifying agencies. The attention to production part has been secondary. In Asia certification work is being done mostly by international certification agencies. Only Japan, China and India have some of their own certification bodies. State of organic regulations are in place in a number of countries including, India, Japan, Korea, Taiwan and Thailand. Organic rules tend to be mandatory in importing countries and voluntary in exporting countries. India is the leading country who has attained equivalence status with regulations of EU, USA and Switzerland. Lack of certification and lack of organic regulations is leading to confusion of growing consumer community in many Asian countries.

Although home to about 60% of the world's population, Asia has a small market for organic products The continent is however becoming a major producer of organic foods with many countries reporting significant increases in organic food production. The Asian market for organic products was valued at about 480 million US $ in 2003.

Japanese market for organic food is the most important in the Asian region. Japan has the largest market for organic food in the region. The country is the most affluent in the region, and its consumers are the most knowledgeable on organic products and their method of production. The Japanese market for organic food was previously estimated at above 3 billion US$. However, the introduction of Govt., regulations on organic farming and organic food caused revenues to shrink over ten fold in 2001. The Japanese Agricultural Standards (JAS) only allow organic foods that are certified by an accredited organization to be marketed as organic foods. This resulted in many organic products to lose their organic status in 2001 causing the market size to shrink

Emergent domestic markets in Malaysia, Philippines, India, Singapore and Thailand, and outside APO members in PR China are maintaining very good growth trends. The range of marketing channels is diverse, as are market conditions from rural India to Tokyo, including ad hoc organic bazaars, small retail shops, supermarket shelves, multi-level direct selling schemes and internet marketing. Exports are still largely composed of fresh produce and low value commodity crops. Organic shrimp farming in Indonesia, Thailand and Vietnam is also emerging as a promising sector. Demand for organic food in rest of Asia countries is limited to affluent people only. However, all these countries are showing strong increase in sales of organic products. Countries like Singapore are almost entirely dependent on imported organic products because of the scarcity of agricultural land. It provides scope for other Asian countries to become major suppliers to these Asian organic markets.

Outside APO members, China is coming up fast as key organic exporter. This is partly due to large increase in production as the country has largest number of organic farms in Asia. It mainly aims at exports but there is also an increasing community of organic consumers inside.

There are two factors responsible for restricted market of organic products. One the price premium restricts demand to countries where consumers have high purchasing power. This is a reason why so far only large cities in Asian countries have organic sales outlets. It is also giving an elitist impression of organic food, which goes against its principles, ironically. Second, education and awareness of organic products is important. As consumers become more educated and informed of agricultural and food issues, they are more inclined to buy organic products whether it be because of factors like food safety, concern for the environment or health reasons. These factors are also responsible for sales to be concentrated in the industrialized world.

There is also a new trend unfolding where there is growing awareness and acceptance of organic farming even within countries. For example India, the growing awareness is causing organic farmers to produce products for consumers in their region. This may

become a major factor for driving domestic sales in some Asian countries such as India.

In most Asian countries, rapid economic development and growing consumer affluence are creating a middle class that is demanding organic products. In these countries consumer demand for organic products will increasingly become local as organic production continues to spread across the Asian nations.

Organic farming as a tool for sustainable development (Dr. Tej Partap)

Organic agriculture can contribute to meaningful socio-economic and ecologically sustainable development in many areas of Asian nations, especially those dominated by small and marginal farmers. On the one hand it is due to the organic practice, which means management of local resources and therefore cost effectiveness. On the other hand, the market for organic products- at local and international level- has tremendous prospects for growth and offers to innovative producers and exporters from these countries excellent opportunities to improve their incomes and living conditions. As to whether organic agriculture is a viable alternative for a particular holding is something, which can only be clarified case by case.

The answer to these questions lie in the fact that at the core of organic agriculture is the promotion of soil fertility, biodiversity, locally adapted production methods and the renouncement of chemical inputs. Such methods and the cultivation of diverse crops stabilize the fragile and marginal ecosystems in these countries, including reducing impact of the chronic problems of drought and pest infestations.

Organic agriculture is based on the combination of traditional, indigenous knowledge and insights of modern agro-ecological research. In traditional farming systems organic agriculture often enables a direct increase in production. In the long run this is even possible for the conversion of high input farming systems. In contrast to maximizing yields as a single factor, the organic production lowers the risk of yield failure, stabilizes return and therefore enhances food security of small farmer's families. Closed nutrient cycles and an efficient use of local resources- e.g. compost, animal waste and local seeds, especially important for subsistence farmers are key inputs of organic farming.

Additionally, organic farmers harvest more products on the same area, thus providing more food for the farmers families and reducing the dependence on one product in the market. To such farmers, organic agriculture means continuing with adapted technologies, more independence and a way out of the debt trap.

Further, certified organic products provide access to new attractive local and

international markets, while the producers generate higher incomes. Incomes can be generated more continuously than in conventional trade. In order to guarantee a fair share of the international organic trade to those contributing most to the production of food, trade organic trade is being made to include social regulations. For these reasons numerous organic products in the Asia countries can also embrace social standards according to fair trade labels such as “Max Havelaar or Transfair”.

In the Asia and the Pacific region, after some years of prolific growth, organic agriculture may impact areas of agriculture and food production starting in niche markets such as ‘direct from producer to consumer’. It will have been adapted to local conditions, both social and agronomic, to produce viable sustainable farming strategies. This will possibly result in a multitude of sustainable and profitable organic enterprises emerging in each country, showing that organic agriculture can have a central role in ensuring that agriculture becomes fully sustainable.

However, the fact remains that so far organic is just a small part of the agribusiness world and its capacities to influence international trade and agri-chemical policies as yet appear limited (Kristiansen, 2006). Although the organic movement internally aims for certain ideals, but its development will inevitably be shaped by global markets and politics. Looking at the progress of organic movement world wide, it appears that organic agriculture in Asia has a bright future and may take up a considerable proportion of agriculture trade.

However, for countries to reap the harvest of organic potentials, they face the challenge of weak institutional capacities. Be it in production, research, quality assurance, consumer awareness and supply chain systems. Most governments are still far away from formulating their organic strategies, explaining their local and national, organic priorities. The later part of the paper explains these policy and strategic imperatives which most Asian nations will need to look at, if they wish to go organic.

Organic Market in the Netherlands (Mr. Ton van de Goor)

In total, there are 81.840 agricultural companies in the Netherlands (2005), which are active in 1.949.000 hectares. The organic agriculture takes up around 48.765 hectares, which is 2.5% of the total agriculture. Organic agriculture is divided into the following product groups: potato, fruit and vegetables (13 %), cereals (11 %), grass/forage (64 %), and remaining (12 %)

The total spending on food in 2005 amounted to €24 billion, which was divided into: Retail 64% and Foodservice 36%.

In 2005, consumer spending on organic products amounted to €467 million, which equalled to 2% of the total amount on food spending. The most important organic

products in retail are milk, potatoes, yoghurt, meat (specific roasted), pancakes and eggs. In catering this is mostly milk (dairy in general) and bread. The organic market in other segments such as hotel & restaurants is limited

Except for the product group potatoes, vegetables and fruit, the majority of products are not close to the targets formulated by the government for 2007.

In the last two years, the different distribution channels for organic products have increased and decreased in various ways. There has been increase in both consumer spending and hectares concerning the organic market in the last nine years.

To stimulate the organic food market the Dutch Government invested almost 340 million euros over the last 7 years. Most of the money was invested in making tax-friendly arrangements to stimulate primarily organic production and knowledge. Based on investment that for a part could match with common food products, the government expected more growth in spending and is hopeful in achieving the goal of 5% organic food spending by the end of 2007.

Simple and cost-effective technologies/approaches for the production of authentic organic products by small farmers (Dr. P.B.T. Wijeratne)

Organic agriculture and marketing of organic products are growing almost everywhere in the world. The world market for organic food in 2004 was at 27 billion US dollars, and the growth was 8-10 %, with the largest increase observed in North America. Asia is expanding, as a supplier in fresh agricultural produce, especially fruits, spices and tea.

The Asian Food market is valued over US$ 500 million and the main share has come from the Japanese market. The Asian region is expected to remain an important supplier of organic fresh products such as fruits, tea and spices. There are about 400,000 ha of certified organic farmland in the Asia. In Sri Lanka, more than 15,000 ha of farm land is certified as organic and it is about 0.65% of the total land area of the country. Although Sri Lanka still does not have a local organic cortication system, the percentage land extent under organic is the highest of the region. In most of the countries, certified organic cultivation is limited only to private organizations and large-scale cultivators. However, in Sri Lanka some of the small scale farmers also reap the benefits of organic agriculture system, as many private enterprises are promoting organic agricultural in rural areas, so that they can initiate a supply chain through rural villages. At present, there are several contract organic supply chains which are working smoothly for agriculture commodities such as black pepper, cinnamon, pineapple, lime, mango, coconut, medicinal herbs and cashew. In this process, the exporter or the processor use the cluster village system and set up a

collection point or a processing center in a central place close to the cultivating areas. The contractor not only certifies the lands of the villages, but also run a private extension arm to handle day-to-day issues of the small farmers. Usually, the contractor promotes few agricultural commodities for a cluster of villages, so that the farmer income is stable throughout the year. This activity is a win-win situation for farmer as well as the contractor.

At present, all organic cultivation and processing facilities of the country depend on third party certification of importing country. This is a major investment and is paid by the contractor. Application of organic manure and botanic extracts is guided by the extension arm of the private contractor. However, sometimes there are technical difficulties in audit keeping of inputs and outputs as some of the small-scale farmers are illiterate. In this system, the contractor will add value to the commodities by means of processing, fair trading or using bio-dynamic practices.

Some examples of the farming practices being used by the small organic farmers of Sri Lanka are given below:

In paddy, organic farming is mainly done for traditional varieties. However, this traditional paddy is cultivated using a special system named, System of Rice Intensification, which originated from Madagascar, but now has been localized to make it more suitable for local conditions.

In fruit cultivation, pineapple, papaya and mango are the most popular fruits among small organic farmers. The major organic fruit product exported from Sri Lanka is the dehydrated pineapple. In addition, organically canned guava pulp, mango pulp, pineapple and frozen single strength juice of pineapple and passion fruit juice are exported

Spices are another popular commodity among small-scale farmers. In Sri Lanka, most of the spices are grown in the back yards of the small-scale farmers and also farmers usually do not use any chemical fertilizers or pesticides. Hence it is somewhat easy to convert to certified organic products with some financial and technical inputs. Due to the small farmland issue, maintenance of good quality of the product is a burning issue in the spice sector. However, in the organic sector, the quality problems were handled by initiating central processing units.

Cinnamon is an important crop to Sri Lanka as we produce more than 90% of the world requirement. Since organic Cinnamon is an expensive commodity, most of the product is finished as a special grade –Alba, which is unique to Sri Lanka. Most of the local spices are used to extract the essential oils, which is mainly used in perfumery and aromatherapy industry. In essential oil extraction process the traditional distillation units are as good as their modern counterparts.

Coconut, which is a nationally important crop, is very sensitive to moisture stress and converting to organic farming practices shows the benefits in less than couple of years. Application of only NPK has now created a situation by depilating the carbon content and micro-nutrients of the soil. Hence, some of the traditional practices such as growing nitrogen fixing plants, having a cover crop, collecting water bodies and animal husbandry are well adapted in organic farming of coconut.

Since Sri Lanka introduced organic tea to the world market in early 1990's, it is gaining popularity, especially as a health beverage. When converted to organic, although there is a yield drop initially, the decline levels off after about two years.

Cashew is socially important crop as it grows in very dry areas, Hence, growing of cashew through dry zone villagers has been initiated by several NGO's and private enterprises. To add value to the commodity, some of the lands are certified as organic. Since cashew crop is seasonal, few other dry zone crops such as *gotu-kola* and mango are also cultivated in the same land to get regular income to the small-scale farmers. In addition, cashew processing is a very labor intensive activity, which provides employment opportunities for the rural villagers.

In Sri Lanka, organic agriculture has created an excellent opportunity to promote the traditional products of the rural areas and to market the unmarketable of the small farmers.

Labeling, branding, and packaging of organic products for food safety and consumer satisfaction (Ms. Deepika Munaweera)

The purpose of food labeling is to allow consumers to make an informed judgment of a product's overall value. Since there are many factors of a varied nature that are required to make such a decision, it is not surprising that the procedures and principles behind labeling are complex. International labeling requirements attempt to harmonize world thinking on the most effective ways of conveying sufficient information to consumers so that they can make rational choices. Thus a very significant responsibility rests with the label and the guidelines covering its design. Food labels have become increasingly complex, particularly as products more from the status of basic commodities to highly processed, value–added products.

Where several sub-products are part of an overall food's finished formulation, the list of ingredients can be very extensive. In fact, the level of detail on a label can be so broad that it is often questioned whether this actually enhances the consumers' ability to judge a product or whether it simply confuses consumers as a result of excessive complexity.

The purpose of food labeling is to allow a consumer to judge a product's contents, its

manner of use, its quality characteristics and its nutritional value. When we think of all these important issues to consumers you get an idea of how much responsibility is placed upon the little label. On top of all that, consumers expect to use the label for quality /price comparisons between similar products. For lack of any other information, the consumer depends on the label to make an informed choice, based on needs and preference. It is therefore not surprising that the guidelines and conventions behind labeling are complex.

Labels have become increasingly complex, as the general knowledge of consumers has increased. As you move from basic commodities to highly processed value-added products, the number of ingredients declared increases dramatically.

Does such detailed labeling enhance the consumers' ability to judge a product or does it simply confuse consumers due to its complexity? Are consumers willing to spend the time comparing products based on labeling declarations? It is unlikely, however, the dissemination of comprehensive information to consumers is an issue that cannot be ignored, whether the system in place is fully effective or not.

The key elements to appear on the food label are the name of the product, its list of ingredients, its date of expiration, instructions for its use or consumption and, where necessary, the country of origin. Others are nutrition labeling, claims (health, natural, organic, etc.) indications of genetically modified or irradiated ingredients, and statements considering the environmental-friendliness of the food packaging.

The joint FAO/WHO Codex Alimentarius Commission has made a guideline for organically produced foods, i.e. Guideline for the production, processing, labeling and marketing of organically produced foods (GL 32 – 1999, Rev. 1 – 2001). Laws of food labeling in Sri Lanka include: Food Act No. 26 of 1980, and Food (Labeling and Advertising) Regulation 2005.

Food quality and safety standards of organic products: issues and challenges (Ms. Nayana Satharasinghe)

Globally, there is a growing demand for organic foods. However, the status of this sector in Sri Lanka is difficult to assess due to the lack of official statistics. It looks as if the sector is growing very slowly. According to the collected information, there are about 50 Companies certified for organic, the products being tea, spices such as pepper, cinnamon, cardamom, nut meg, cloves, ginger etc., fruits such as pineapple, mango, banana and passion fruit, cashew nut and coconut. All these certified products are meant for export. As yet there is no significant demand for organic products in the domestic market.

A major issue in Sri Lanka in relation to organic production is the lack of infrastructure.

At present there are no certifying bodies with local auditors employed. Foreign certifying bodies or bodies with foreign collaboration operate certification activities. Due to this fact a high cost has to be borne by the relevant organizations to maintain the certifications. All the testing is carried out in overseas laboratories, which also adds to the cost. This also makes our products less competitive in the market when compared to those from certain neighboring countries like India which compete for similar products.

The organic sector is not yet national in vision in Sri Lanka. Government policies/action plans to develop the sector is not evident. The eye-opening of the policy makers into the sector considering the potential export market together with other benefits that could be reaped through organic farming would be beneficial. Providing certain incentives such as inputs for the soil, may encourage the organic farmers. As of now Sri Lanka has no legislation governing organic products.

Imparting a clear knowledge to organic farmers, about what is organic farming as defined in the standards is important in the country. The farmers tend to think that non use of synthetic fertilizers alone makes the system organic. It is essential that the organic farmers are properly educated on how to improve soil fertility, control/manage pests, diseases and weeds, and other technical aspects of organic farming. In this context, the knowledge and technology transfer from experts to the farmers needs to be much organized. It is also necessary that the knowledge of farmers on the available/suitable organic inputs is increased.

Development of reliable certification and traceability systems for better competitiveness of organic products in international markets (Mr. Yutaka Maruyama)

Consumers in international market become more interested in Food Security and Food Liability. In order to meet their interest, producers should research what kind of activity (farming way, controlling method) is more effective, and they chose their actions accordingly. Organic farming is generally one of the most accepted methods because organic set a high evaluation worldwide.

Organic and traceability are two different subjects for reliable food supply. Organic is a “faming method”, and Traceability is a “tool for good product control” for all products not limited to organics. The paper explains separately these two subjects but focuses more on explanation of organic certification.

Considering food liability, producers can chose several approaches. One of them is producing organic foods, because organic foods already have clear standard and many consumers have confidence in quality and safety of organic foods.

When consider other ways for food reliability, there are many subjects like, no chemical residues, good quality foods, disclose their faming method, immediate action for problem investigation etc. For achieving such subject, it is effective to establish traceability system.

(1) Organic Product

For the organic trade business, producer should consider not only the organic farming technology but also organic certification. Many import countries regulate their organic certification system, based on Codex guideline of organic labeling.

In the case of Japan, in order to label products as organic, producer should follow JAS (Japan Agricultural Standard) organic certification system. All organic (plant base) agricultural product producers should be certified by JAS certification body (CB) and should affix JAS seal on the products. This is not only for Japanese domestic products but also for imported products from other countries.

The way of organic producing in Japanese organic standard is almost the same as that of other counties. The practice of organic farming is not enough to get JAS certification. In order to get JAS certification, producers need to establish organization with good production control and label guarantee system in each production group. The paper briefly explains about the Japanese organic certification standard and the way of establishment of such control system.

(2) Traceability

Recently the definition of traceability is being discussed in Codex and ISO.

In order to understand correctly, it is necessary to realize that traceability is not a “purpose” but a “tool” for make “other purpose”. For example even producer and distributor established complete traceability system, if product is contaminated with chemical residue it is not a reliable product. In such case they firstly establish other food safety program like GAP together with traceability system. In this case traceability system should be placed as one of the GAP system.

About the relationship of organic production, traceability is one of the requirements of organic certification. But traceability system is applied not only for organic but also all other products.

When producer think to establish traceability system, they need to consider purpose, scope, measure, cost, etc. For this consideration, making Traceability System Plan is most helpful.

Apart from organic requirements, the paper discusses how to establish traceability system for other (non-organic) products.

In conclusion, in order to get into international market, it is better to consider strategically which activity they chose for solicitation to consumer. There are many

menus for activity of food liability. Producer can choose which activity is more suitable and establish control and management systems of each subject.

About the organic certification, government has a room to assist producers in many areas. For this purpose, the speaker recommended to proceeding in two steps. The first assistance is a direct support to producers for getting certification, e.g., Seminar on developing management systems; consultation to applicants; and financial support for certification fee. The second step is to establish regional certification body and give certification at reasonable cost. And finally government establishes organic national regulation in future.

COUNTRY PAPERS

Bangladish (Mr. Abul Fazal Badrud-Doza)

Bangladesh is predominantly an agricultural country. Traditional farming, i.e., farming in Bangladesh before 1960's was organic farming, with its scarce agricultural land vis-a-vis ever increasing population & higher demand for food forced/compelled farmers to use chemical fertilizers, synthetic insecticides etc. to get higher output from some land. Of late, certain health conscious quarters are putting emphasis on organic farming/food products to mitigate the negative impacts of modern farming on environment, soil productivity, human health and also to generate sufficient family income for farmers.

Major impediments in promoting organic farming in Bangladesh are: poor yield, pest & disease management, weed control, soil fertility & nutrient management, etc. Of course all these impediments could be removed with adequate knowledge on organic farming. Bangladesh government is yet to frame any policy/measure on organic farming.

Organic farming scenario of Bangladesh with reference to soil fertility, seeds and planting stock, crop rotations, and pest management practices are mentioned in the country paper. Advantages and disadvantages of organic farming in Bangladesh have also been included in the paper.

Success story of M/s. Kazi and Kazi Tea Estate, a private organic farmer, producing Tea, Herbal Medicine, Milk & other dairy products and organic pesticides is described in the paper. Finally, paper enlists certain recommendations for promoting organic farming in Bangladesh.

ROC-1 (Dr. Ming-Teh Huang)

Organic farming is a worldwide trend in the concerns of sustainable agricultural

development, environment protection, food safety, and ecological balance. Taiwan has setup the policy for extending the organic farming system since 1985. The small-scale farmers in Taiwan may obtain profits from the production of organic products to compete with conventional farmers. In Taiwan, organic farming has been defined under the "Agricultural Development Act" published by Council of Agriculture (COA), Republic of China.

The management of organic farming and its products includes the accreditation and certification. There are four certifying organizations to perform the duty of organic product certification. The qualification of certifying organization is accredited by COA. Currently, a total of 1335 ha of organic farms are certified by 4 different certifying organizations. Organic rice and vegetables are two major organic farming products. Hualien, Taitung, Yunlin, and Chiayi are 4 major organic farming counties. Almost all the organic products are consumed domestically. Due to the huge demand of organic products, Taiwan also imports many organic products from USA, Japan, and other countries.

For sustainable development in agriculture, new and improved technology should be invented to ensure the safety and stable production of organic products. The quantity and quality of certifying persons needs to be improved. Fake organic products should be removed from market to enforce the confidence of customers. The regulations for managing organic farming system should be revised and amended. Law for managing organic farming system should be legislated to protect both the organic producer and consumer. Producer and seller of fake organic products should be penalized strictly to ensure the further development of organic farming. Except for education for producers and customers, government should allocate more funds to promote the organic farming and the sale of local organic products. Through the cooperation among government agencies, farmers, and consumers, the organic farming will be developed progressively.

ROC-2 (Dr. I-Hsin Sung)

For sustainable agriculture, health, safety, nature and environmental protection are becoming more important to the producers and consumers in Taiwan. The government and citizens' groups have been promoting the organic farming since 1986. It was experimentally managed in 160 ha in 1996, which expanded to 1,250 ha and to 953 farmers in 2004. The major organic farm products are rice, vegetables, fruits and tea, etc. These products are remarkable increasing the income of the farmers. The marketing channels of organic products are widely expanded with many types, such as

organic outlets, supermarkets, restaurants, agricultural collaboration companies and internet shops. Based on the practices and researches of the organic culture, soil and organic fertilizer, microbial control and non-chemical pest control, it is possible to execute and promote organic farming in Taiwan. So far, four civil organizations take charges of the verification and label issue of organic products, while the public agricultural administrations handle the policies and supervise this system. However, it has considered problems to promote the organic agro-business rapidly because of small production area, insufficient laws and skills of certification and high investments. In future, we hope to increase the area, decrease the cost, and strengthen the laws and ability of certification in civilian organizations.

India (Dr. Akali Sema)

North-East Region (NER) of India comprising the states of Assam, Sikkim ,Arunachal Pradesh, Pradesh, Nagaland, Manipur , Mizoram and Meghalaya occupies a total geographical area of 18,374 million ha (5.6% of the country) with 39 million population. This region is 8th mega biodiversity hotspot with rich ethnicity and social set up. The region represents wide variation of climate, rainfall and soil

NER has tremendous scope of organic farming because of its immense strength and potentialities and is considered Organic by default. The farmers either out of ignorance or their rigidity with traditional practices or their slowness to adopt modern technologies were practicing organic farming naturally. Abundance of rainfall offering an opportunity of rainfed agriculture, the hilly terrain preventing the application of inorganic inputs (out of farm resources) and making them utilize their farm resources, the small and marginal land holding capacity of the farmer hindering them to produce on commercial scale, all this has eluded them of the benefits of green revolution and the production and productivity remained low. However, all this which was once considered as weakness has now turned to be the strength and offers a great opportunity for organic farming,

The State governments have now started intervening especially in certification process and marketing aspects. The farmers are being encouraged for organic farming by giving assistance as cash or organic inputs. So far, Sikkim and Mizoram States have been declared as Organic while other States of the NER region are in the process of making such declaration soon. The Government policy to promote organic farming includes identification of areas/crops for organic farming, weaning the farmers away from inorganic inputs by providing alternatives, close monitoring for the use of inorganic inputs in case of severe attack by pest & diseases, enhancement of the

production of organic inputs by creating more infrastructure to maximize production and the constitution of organic board in the State. The process of Organics certification has been initiated already in some parts of different NER States.

The paper highlights the challenges and the strategies to be adopted in order to promote organic farming in the region . Survey and identification of areas and commodities, propagation of indigenous farming system and traditional practices, capacity building, research back up, strengthening infrastructure, communication & postharvest facilities, setting up regulatory body and constitution of a regional committee to formulate a comprehensive and implementable policy on organic farming . A road map of organic farming in NER developed by ICAR, Res. Complex for NER , Umiam has been depicted for further suggestions and modification if any.

Indonesia (Mr. I. Ketut Kariada)

Traditional concept of agricultural development in Indonesia is part of sustainable agricultural development. Within this concept, livestock is integrated with crops holistically where livestock provides manure for crops and increases farm income while crops and their products provide animal feed. However, with the introduction of Green Revolution technologies it is now very difficult to find the way of traditional farmers to implement the above model, as well as to secure local specific potency. The input-intensive modern technologies have increased productivity but have negative side effects such as natural resource degradation, environmental pollution, chemical residues in agri-food products, resistance of pests and diseases against chemical pesticides, etc. One way to mitigate such negative impact of Green Revolution Technologies is adoption of organic farming.

In view of proven environmental and social benefits, government after consultation with farmers and other stakeholders is putting efforts to develop policy for promotion of organic farmers. In marketing organic product, there are several ways including traditional marketing, following supply chain management as well as more efficient marketing through contract market between farmers groups and buyer from abroad especially for coffee and cocoa products.

Main constraints in promoting organic farming are: lack of awareness of benefits of organic agriculture by producers, consumers, governments, and other stakeholders, risks involved in shifting to new farming methods, uncertain crop yields, inability to achieve economies of scale due to small holdings, limited market information, difficult market access and high certification costs.

Iran, Islamic Republic of (Dr. Gholamreza Chabokrow)

Iran is a semi-arid country with average of 250-300 mm participation. The total cropland area is 14.5 million ha (9 %) of total country area), where 12.1 million ha (84 %) are under farming and 2.4 million ha (16 %) are under horticulture. In Iran, organic agriculture is in its relatively early stages and the area under organic management has been comparatively low.

The area under organic agriculture in Iran is more than 239460 ha (1.6 % of total farming area), where 125800 ha are under horticulture and 113660 ha are under arable farming area. Besides in more than 254000 ha of horticulture area and 554000 ha of farming area, no pesticides are used.

Organic products grown in various agro-climatic zones in Iran are date, fig, grapes, pomegranate, pistachio, walnut, olive, almond, saffron, garlic, tea, rice, wheat, apple, alfalfa, strawberry, citrus, oilseeds, cotton, and many rangeland products. Domestic organic markets and consumer awareness are underdeveloped in Iran, but interest is growing.

In Iran, farmers have so far obtained a fifty percent discount on cost of already subsidized pesticides. The newly established High Council on Pesticide Use Reduction Policies, chaired by the Ministry of Jihad-e-Agriculture, decided to cut pesticide subsidies by seven percent per year. This Council also commissioned a study on organic agriculture policies in the world to evaluate the feasibility of this system in the Iranian context. Strict standards and the export orientation of organic agriculture were found to be less attractive than integrated pest management for the Iranian objective of pesticide reduction. Legislation is being formulated in Iran to facilitate production and exports of organic products.

The focus on certified organic products has distracted attention to contribute to local food security, especially in low-potential areas in Iran. Farmers of Iran tend to prefer more flexible systems that build on traditional management systems to technologically-costly production systems. Even though the countries with the biggest markets for organic products are also the major producers of organic food, it is still the case that, particularly for developing countries such as Iran, substantial export potential exists. There is also the potential in Iran for local markets.

ROK (Ms. Eun-Mee Jeong)

Environment-friendly (hereafter called EF) farming in Korea started from the organic farm movement in the 1970s. The EF agriculture as the peculiar expression in Korea, is to pursue reducing a burden of environment in agriculture. The EF agricultural policy developed to support high-quality farm products, such as organic farm products, doing so for the sake of strengthening the competitive power of Korean agriculture after the

agreement of UR. The policy measures includes, among others: enforcing certification of organic farm products, establishing the Law of Fostering the EF agriculture, carrying out the order of direct-payment, and setting up the Five-Year Plan for EF agriculture.

This paper focuses on the background of social economy, the standpoint of EF farming in agricultural policy, and the analysis of the characteristics in EF agriculture. Three aspects in the background of the policy are as follows: the social movement (the organic farming and direct-deal movement among farmers and consumers), the social economy (the domestic and foreign situation of the agricultural policy), and the social system (the renewal of the local self-governing body, and the reformation of the agricultural cooperative). The standpoint and characteristics of the policy are studied by the analysis of the target and means of the policy which is based on the policy documents.

Lao, PDR (Mr. Khemphet Souksomvang)

Lao PDR is a land locked country. The economy is predominantly rural-based agriculture. More than 80% of the population is dependent on subsistence agriculture. Majority of Lao GDP comes from agricultural sector. Besides, organic agriculture coupled with a broad and diverse living style of ethnic group's farming plays an important role in promoting rural agri-eco-tourism by challenging tourists to adventure.

The Government of Lao has defined the fist priority on agricultural goods, particularly, organic agricultural goods for export. It is expected that this sector might play an important role in sustainable development of socio-economic growth. Recently a project for the promotion of organic farming and marketing (PROFIL), the first "program-credit financed" project in Laos, has been launched. However, development of organic farming is constrained by a shortage of 'social capital'. There is a general lack of human resource capacity in all sectors and at all levels of society, particularly in remote areas. Currently, the country lacks expertise and skilled manpower in the organic sector. Thus, there is a need to develop human resources in subjects related to organic agricultural products and product processing.

Goods of developing Lao organic agriculture to export will have a positive impact on the national economy, thereof; it persuades inflow of money and creates opportunities for farmers representing 80% of the Lao workforce to earn more income. This will provide the accomplished part of our objective which is to develop the organic agriculture sector to allocate employment opportunities for youth, especially, women, among the multi-ethnic groups in rural and remote areas and improve the well being of

farmers and environmental protection in Lao PDR.

Malaysia (Mrs. Che An Binti Mohd. Jones and Mr. Ganisan Krishnen)

Organic farming is getting growing preference among Malaysian farmers due to increased local and export demand. The organic farm acreage has steadily increased from 131.5 ha in 2001 to 2,208.65 ha in 2006. Although there are few entrepreneurs were operating on large scale, but the majority of the organic farms are small scale with cultivated acreage ranging 1-3 ha. Mostly the large-scale farms incorporated ecotourism in their farm programs in order to create confidence, awareness and interest amongst consumers and to educate future generations.

Currently there is a trend towards cultivating organic vegetables under rain shelter and netted structure which could eradicate the pests and reduce the loss due to rain damage on crops. Organic product could be found from the shelf of hypermarket to specific outlets which are specially selling organic products.

Various government agencies in Ministry of Agriculture and Agro-Based Industry (MOA-ABI), such as Department of Agriculture (DOA), Malaysian Agricultural Research and Development Institute (MARDI) and Federal Agriculture Marketing Authority (FAMA) are playing important roles in promoting organic farming in the country by launching awareness programs, extension works, researches, incentives, marketing channels, policies, standard and organic accreditation. Non-government organizations (NGO) such as CETDEM, CAP and other organizations also contributed in promoting organic farming among Malaysians. The Malaysian organic farming possesses a good future due to increased demand for organic products, and strong support from governments and NGOs for the organics.

Nepal-1 (Mr. Brajesh Nanda Vaidya)

The Nepalese agricultural practices till fifty years back were done all in traditional organic methods before the import of chemical fertilizers and pesticides. After half a decade, traditional organic farming has diminished where the use of chemical inputs has increased damaging local biodiversity, soil fertility and productivity in the agriculture sector. But gradually the government, non government and private sectors are extending their effort to make organic agriculture more accessible and production/marketing oriented. Professional and organized organic farming are starting but in small ways. Without a clear act, policy and regulations in place at national level, small land holding farmers are finding it difficult for accessing the market as well as convincing the consumers.

Nepal-2 (Mr. Kishor Prasad Pant)

Organic farming is becoming popular in these days. The ecological advantages have proved that Nepal has potential to produce quality organic products. Most of the high hill farmers and large number of mid hill farmers do not use any chemicals even today. Because of the global trend in increased promotional activities in organic farming, Nepal can benefit from the export of these organic agricultural products. Lack of adequate research and extension activities, organic inputs, lack of production and marketing information, trained manpower and programs can be taken as the present constraints. Main issues in promoting organic farming today in Nepal are: certification of the products, organic legislation, and government policies.

The government of Nepal seems to be committed for promoting organic farming in the country. Several pieces of policies and strategies are formulated to promote organic farming. But such policies and strategies are scattered and inadequate. Nepal has entered into multilateral global trade regime though the membership of the World Trade Organization, which brings enormous opportunities for exporting, certified organic food products to high income countries. In addition to development programs aimed at production and marketing of organic products, Nepal needs to develop standardization and certification system, and infrastructures for such products. For this purpose, a consolidated policy and a clear set of legislative provisions for organic farming are highly appreciable.

Pakistan (Dr. Mumtaz Akhtar Cheema)

Organic farming in Pakistan is in infancy. There are no reliable data on organic farming being carried out in different pockets of the country by small organizations like Lok Sanjh, The Sindh Rural Women's Uplift Group, Agha Khan Rural Programme and Pakistan Organic Farmers Association (POFA).

Any sort of regular program on organic farming by Government agencies has not been initiated so far. However, to reduce the use of chemicals in agriculture some of the isolated eco-friendly initiatives undertaken in Pakistan are: weed control through allelopathy, integrated pest management, production of clean cotton, use of biological control of insect pests. For the moment area under organic farming is only 20,000 ha, which is 0.07 percent of the total cultivated area. However, facility for third-party certification of organic products is non-existent.

Use of chemical fertilizers and pesticides in major crops grown in Indus valley like cotton is still on increase. However, many of the upland crops are grown without chemical pesticides. The paper discusses successful case of one Organic Village namely "*Nauk Soq*", which is located in Skardu (Baltistan) in the Northren Areas of

Pakistan. This intervention was made by the Agha Khan Rural Support Programme. They organized the village community, provided them with necessary inputs and technical advice to undertake organic farming. As of now the study is in progress. Due to their peculiar climate, landscape, flora and fauna and culture the Northren Areas of Pakistan offer a huge potential for organic farming through promotion of agro-tourism. This will require concerted efforts of all concerned. Besides this some farmers in Pakistan are producing organic products on their own and exporting them to different Middle East and European Countries. The future of organic farming in Pakistan is bright but it will have to be promoted in parallel to the input-intensive agriculture.

Philippines (Dr. Francisco Babor Geromo)

The beginnings of organic farming in the Philippines may be traced back to indigenous or traditional agriculture where growing of crops and raising of animals was done based on indigenous concepts of ecological practices in those times. Organic farming was first introduced in the Philippines during the mid of 1980s. It was an offshoot of environmental advocacy movement rather than agriculture development. Organic farming in the country is still a marginal growing method since agriculture remains generally dependent on massive use of agro-chemicals for the popular belief that these could deliver increased productivity and profitability.

Since the 1970s, Philippine agriculture began its extensive dependence on modern or high-yielding crops, livestock and poultry as well as on modern agrochemicals. As of 1986, organic rice production has been growing significantly in the Philippines.

Today, efforts are continuously building up to push large-scale organic farming locally. There are four bills in the House of Representatives seeking to promote organic farming in the country. House Bills 413, 959 and 1637, respectively; propose the establishment of a comprehensive bio-organic farming program in the country. The program is designed to develop and propagate bio-organic cultivation and production methods. It also aims to educate farmers and provide extension services to individuals or groups who are practicing bio-organic farming. Meanwhile, House Bill 559 seeks to establish an organic farming training and production facility in every agricultural barangay in the country. A grant of special rates on loans intended for organic farming is also being raised in the Lower House as well as an increase in the proposed P50 million fund for the supply of organic fertilizers, nationwide. However, since these bills still await Lower House approval, the Agriculture Department came up with two palliative programs, Tipid Abono Fertilizer Saving Program and Balanced Fertilizer Program. The first one encourages the use of organic fertilizers as substitute to expensive inorganic fertilizers while the second one utilizes a combination of chemical and organic

fertilizers.

Most farms in the country are very small, only about 2.5 ha on the average. Also, the country does not have basic industries that manufacture farm implements, thus, most farm inputs, tools and machineries need to be sourced from other countries. Most independent farmers use only simple tractor or draught animal like *carabao* (water buffalo) since high-priced farm implements are beyond their means. Access to modern farm machineries, processing services and post-harvest facilities is often limited to big commercial farms, agribusiness corporations, contract growers and multinational companies.

The organic rice industry in the Philippines is already showing potential for large-scale production. An Agriculture Department agency, the Philippine Development Assistance Program (PDAP) claimed that organic rice production per ha is now comparable to the yield of hybrid rice varieties. And there are already organic rice varieties being sold in Metro Manila supermarkets.

The private sector and non-government organizations, on the other hand, are more aggressive with their advocacy for organic farming. There are five Philippine-based institutions that are actively involved in an international movement for the advancement of organic agriculture in the developing countries, particularly. These institutions: the Alter Trade Corporation (ATC), Farmer-Scientist Partnership for Development (MASIPAG), Organic Certification Center of the Philippines (OCCP), Organic Producers Trade Association (OPTA), and the Sustainable Agriculture Center (SAC) at Xavier University are members of the Germany-based International Federation of Organic Agriculture Movements (IFOAM), which tries to unite 750 member organizations in 108 countries for such a cause.

Sri Lanka-1 (Mr. M.B. Dissanayake)

Sri Lanka started its certified Organic Production 25 years ago. Today Sri Lanka is the main Certified Organic Tea exporter in the world. Sri Lanka export tea, Coconut, Spices, Herbs, Forest Product, Fruits & Vegetables, to Japan and European Union countries. In year 2003 the government of Sri Lanka recognized the important of organic agriculture and included it in the National Agriculture Policy. The present government also recognized the important of organic farming in its manifesto and allocated Lanka Rs. 2.5 million for promotion of organic farming with the intension of exports. In year 2006 government allocated Lanka Rs. 25 million for improving the production base of fruits and vegetables under organic system. Government also allocated Lanka Rs. 85 millions for implementing 'organic certification system'. Department of Agriculture, Department of Export Agriculture, Coconut Research

Institute and the Tea Research Institute carry out research on organic farming in their mandated crops. A considerable amount of proven research information is available for growers.

Export Development Board promotes the organic products in other countries. They also started to formulate a Certification Body with EU assistance.

Sri Lanka Standard Institute has initiated a program to formulated local standards, satisfying a long-felt need in the organic sector**.** All stakeholders are working together to grab the market organizations in other countries. Under-developed market needs some government incentives for conversion in some areas. With a implementation of proposed five-year program of the Ministry of Agriculture Development most of these hurdles could be over come.

Sri Lanka-2 (Mrs. Shifaya Maraikar)

Increasing production with indiscriminate use of chemicals is the aim of most Lanka farmers particularly in the vegetable sector. About 90% of the fruit cultivation is in home gardens and this is somewhat organic. The benefits of organic farming are well accepted but consumers are reluctant to pay a premium price for organic produce. The Tea Research Institute, Talawakalle, has researched on organic tea production for the past 21 years but the technology developed is used by few private estates to produce organic tea for export. The Department of Agriculture has prioritized 12 fruit crops for research and development. In addition a large number of under utilized fruit crops are found growing in home gardens, natural reserves and forests. Organic cashew is produced and processed in the Hambantota district to the south of Sri Lanka, under the Export Production Village (EPV) Programme. There are several NGOs in Sri Lanka, promoting organic farming particularly among the rural poor. Few organizations are engaged in organic exports.

Development of local quality standards is a long-felt need. A policy plan has been developed by Lanka Organic Agriculture Movements (LOAM) with the assistance of Sri Lanka Association for Organic Agriculture to develop local standards. Certification of the organic produce for export is done by international agencies accredited to the International Federation of Organic Agriculture Movements (IFOAM).

Most cropping systems, particularly the intensive vegetable cultivation systems are heavily dependant on chemicals. The Department of Agriculture has developed technologies to minimize the use of chemical fertilizers and agrochemicals for rice, vegetables, fruits and other field crops. Several programs are conducted to promote environment-friendly systems such as the Integrated Pest Management (IPM) system and Integrated Plant Nutrition System (IPNS).

Sri Lanka (Mr. Jayasinghe LK Weeralal and Mr. Ransilu C. Watawala)

Agriculture occupies as a domestic position in Sri Lanka and will continue to do so for a long time to come. The agriculture sector in Sri Lanka is comprised of plantation crops, export agricultural crops (EAC), annual field crops, livestock, fruits, and fisheries. The Department of Export Agriculture (DEA) plays a big role for development of export agriculture. Good quality and environment-friendly niche products are essential to compete in the international market. Therefore DEA planned a program for development of organic spices sector.

The Sri Lankan government is supporting the organic farming agriculture program of DEA regardless of the farm size. The department launched organic farms for selected areas in potential districts, especially for cinnamon and pepper (black pepper). This program includes: a knowledge and skill development program, productivity improvement, some subsidies for organic fertilizer production and inputs, development of postharvest practices, etc. In 2005 year our farmers produced more than 100,000 kg of organic spices but they don't have any certification yet. The organic farming agriculture program of DEA is confronted with the challenge of providing Certification of organics. Other main problems are poor record keeping and lack of good marketing channel.

Vietnam (Dr. Do Ngoc Diep)

Organic agriculture is defined as "an ecological production management system that promotes and enhances biodiversity, biological cycles, and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain, or enhance ecological harmony. Organic farming requires the use of none-synthetic materials and relies on nutrients derived from organic sources. The Vietnamese stake holders realize that the quality of their products is better when soil management is based on environment-friendly practices. However, due to a shortage in animal heads to produce farmyard manure and other organic sources, the combination of organic and inorganic fertilizers for crop production is presently encouraged to ensure integrity of our environment and sustainability of agricultural development.

FIELD/COMPANY VISITS

The participants visited Lanka Organics (Pvt) Ltd., (a cashew processing plant), cashew gardens & mixed crop gardens; and a small-farmer house at Maho (Kurunagala District), a rural area in the dry zone, about 150 km from Colombo.

At Maho, Lanka Organics (Pvt) Ltd, a Sri Lankan organic agriculture-based company

initiated an organic cashew cultivation program with the villagers of Maho area in 1993. The company is involved in cultivation, processing and export of organic produce. Sri Lankan cashew is in very high demand due to its very special flavor, but had no organized cultivations in mid 1990's. Hence Lanka Organics (Pvt) Ltd., invested in cashew program in Maho which is an ideal place for cashew cultivation, as the place is very dry and thinly populated.

Up to 2003, primary processing of cashew was done by the farmers at Maho at small-scale facilities and the secondary processing was done by the company at their certified processing factories. NASSA certification was available for the cultivation from the initial stages and in addition, Skal certification was obtained in 1999. In 2003, Lanka Organics (PVT) Ltd had built a processing facility at Maho, which now handles processing and packaging. At present, more than 150 small-scale farming families, which account to more than 500 acres, are involved in this cultivation program. In addition to cashew, the company has encouraged mixed cropping and purchases coconut, mango, lime, Gotu-Kola and tamarind for further processing and exports.

At present about 70 workers (all women) are involved in processing activities at the factory, while about 50 villagers are involved in sorting and primary processing of nuts. During the off-season of nuts, the processing facility is utilized to dehydrate Gotu-kola. Lanka Organics (Pvt) Ltd. plans to expand the processing facility to produce wine from cashew apple and to obtain the liquid extract from the nut shell, as both byproducts are in high demand from Japan.

After above factory visit, the participants had opportunity of visiting mixed crop garden and a farmer house located therein. The participants asked many interesting questions from the farmer, of course through interpreter. It was impressing to note that though farm size was only 2 acres (less than one hectare) and farmer had no other means of income, he had all the basic amenities of life available at home such as electricity, motorcycle, refrigerator, sewing machine, etc.

Some of the lessons learnt from the field trip are as follows:

1) Passion in dealing with small and marginal farmers can be rewarding. Please note, prior to becoming a successful enterprise the company suffered from financial losses more than once but management never gave up.
2) Value addition to produce can provide jobs to local communities and thereby contributes to their socioeconomic development esp. women empowerment.
3) Innovation in farming/enterprise, such as introduction of mixed farming in the above area and value addition to cashew produce, can be rewarding.

4) Accepting corporate social responsibility SMEs can play an important role not only in the socio-economic development of resource-poor rural communities but also in protecting natural resource base of the area.
5) Close cooperation among the stakeholders (farmers, produce collectors, enterprises, etc) is the key for developing successful SMEs.

WORKSHOP OUTPUTS

A workshop was conducted to provide an opportunity for further discussion and sharing of views and experiences among the participants. The participants were divided into two groups- Group I and II. Each group was asked to address a different set of issues which have been culled from the presentations and discussions. GroupI was assigned with issues and problems related to production of organic products while Group II took up those related to marketing/trade of organics. The resource persons facilitated the discussions while APO Secretariat coordinated the group discussions.

The respective outputs of the two groups are summarized below

GROUP I

Theme: Production of Organic Products

A. Why Asian countries should promote organic farming ?

1. To overcome the problem of degradation of soils
2. Prices of chemical fertilizers are becoming high
3. Favorable climate for compost making
4. Improving subsistent livelihoods on marginal lands
5. Increasing global trade in organic- export opportunities
6. Emerging pesticide-in-food based human health problems (Cancer, kidney failure due to heavy of application of pesticides etc)
7. Revitalize sustainable traditional farming practices that were de facto organic.
8. To meet increasing domestic consumers demand
9. Making nations organic food demand self sufficient (import substitution)
10. To uplift the socio-economic conditions of marginal farming communities (e.g. mountain people)

B. Issues identified:

1. Weak Institutional Capacities
   a) Researchers / scientists
   b) Poor extension systems
   c) Capacity in creation of organic institute
   d) Lack of awareness among the farmers

2. Problem of Access to cheaper Certification
   - High certification costs of foreign agencies
   - Difficulties in getting certification facilities
   - No or few domestic certification facilities

3. Lack of Clarity in National Organic Priorities and Approaches

4. Scattered / isolated organic stakeholders without a common voice and platform (to seek support and incentives)

5. Little / no research / studies as yet on potential organic niches of the countries (from where to start)

6. Lack of equal incentives / support to the organic farmers and the problem of premium prices

7. Absence of Supportive Government policies

8. Lack of the organic technologies for organic farmers

C. <u>Proposed strategic action plan to address the above issues</u>

1. Capacity building
   a) Trainings, to create a critical number of organic research and development professionals in each country
   b) Strengthening capacities of existing agricultural Institutions in the area of organic and/or need for creation of organic research and training institutes
   c) Facilities across country for training of farmers in modern organic tools, that will need large number of trained organic extension experts, thus training arrangements for organic extension.
   d) Capacity building within countries for setting up certification bodies. Certification agencies and other mechanisms (e.g. ICS, GS, PGS) need to be created within countries to make certification cheaper to farmers.

2. Policy Recommendations
   a) Governments of Asian countries should consider providing incentives to organic farmers

   (such as Korea gives incentives to organic farmers by way of direct payment of 750 US$ per year per farmer)

b) To give incentives, Governments may consider direct payment system to the organic farmers (in place of in kind subsidies given to other traditional growers)

c) Giving equal priority to organic livestock farming is important

d) Since farmers believe farmers more than any one else; Organic farming technologies should be evolved , refined and demonstrated on organic farmers fields in partnership with the organic farmers (i.e. making organic farmers active partners in technology development and refinement and dissemination).

3. Organic research institutions need to be created and strengthened for development / refinement of technologies and dissemination
4. Model organic farms should be established across a country to facilitate wider dissemination / adoption.
5. In certification there is need for record keeping which farmers find difficult. Alternative systems developed for addressing this problem, IT based ICS and GS be promoted.
6. In order to meet the countries demand of organic manures, every country should encourage farmers to produce their own organic compost resources.
7. International agencies such as APO should facilitate, studies, and training of human resources to build strengths of poorer countries to promote organic farming.
8. Organic stakeholders within countries and across ASIA should create platforms to come together to learn from each other as well as to give common voice in international fora (e.g. IFOAM)on strategic issues of standards etc.
9. Efforts needed to identify right organic niches and products of the country, so that the organic movements in the countries are valued for complementing sustainable development efforts rather than appear competing for resources.

GROUP II

Theme: Marketing of Organic Products

A. Areas:

	Area	Details
1	Recapturing Current World Trend	Health Issues National Products Life Style Interventions Ecotourism
2	Quality Assurance and Traceability	Certification Consumer Confidence

3	Innovative Marketing Methodologies	E-commerce Home delivery system
4	Revitalization of Traditional Commodities	Marketing of traditional commodities in value added form Herbal products Aroma Therapy Products Ayurvedic products Functional Food Products

B. Issues and Actions

	Issues in Marketing	Actions	Example
1	Poor awareness amongst stakeholders and non use of marketing opportunities	Initiate awareness activities for mass media and social marketing Emphasizing new business activities with available information and recourses	Sri Lanka (A)
2	Absence of proper policy, and non use of local standards, training and high cost of third party certification, negative impact from improper subsidy schemes	Formulate / update and utilize policy Formulate / update local certification Training of certifiers (through state sector) Group certification and use of local certification body Provide incentive for organic farming, considering its contribution to environment	Taiwan (B)
3	Unguided supply chain (the price, cost, supply volume and seasonality)	Initiate market research, and establish market information centers in local level. Proper usage of agro-climate zones (for volume and seasonality) Initiate quality assurance activities	Nepal (C)
4	Low Value addition and poor product range	Value addition by Bio-dynamic, Fair-Trading and processing Diversification of products	Tea-SL (D) Eco Tourism, -Pakistan (E) Malaysia

			(F)
5	Poor Logistics (Infrastructure, storage and transport)	Promoting local collection centers with appropriate technology and central processing units Devise and incorporate local technology for organic logistics	Nepal (G)
6	Poor Inter-linkage between agencies.	Coordination and collaboration among stakeholders with establishment of national level taskforce	Laos (H)
7	Non use of appropriate local technology and lack of efficiency (such as automation)	Validate, enhance and patronize traditional methodology Create SOP (Standard Operation Procedure)	Nepal (I)
8	Poor marketing strategy	Local - Promote sales outlets for Eco-Friendly (Conversion period). and organic products International - State assistance for Trade Fair, E-commerce and bank guarantee.	Sri Lanka (J)

C. Examples of success actions

		Theme	Action
A&J	Sri Lanka	Export Organic Products	Sri Lanka exports large quantity, whereas the local community (consumers) was not aware of importance of organic products. We will make use of mass media to create awareness.
B	Taiwan	National Policy and Local certifiers	Many certification bodies and there is coordination effort among the bodies to standardize certification system.
C	Nepal	Proper usage of agro-climate zones	Nepal use different agro-climatic zones for off season products.
D	Sri Lanka	Tea trade	Sri Lanka has diversified their tea into different flavors such as ginger, cinnamon, chai, spice etc.
E	Pakistan	Eco tourism	Presentation at country report

F	Malaysia	Zein Xin Organic Pvt. Ltd.	They own a marketing mechanism to sell their products. I.e. Cool chain system, van marketing outlet and restaurant for organic foods. Employing agro-tourism.
G&I	Nepal	Cold Storage of strawberry during transportation	Use of indigenous technology to transport strawberry to the market
H	Laos	Rice export	Export rice to Japan with coordination from Japanese importers.

GENERAL CONCLUSIONS/RECOMMENDATIONS

Based on the resource papers and country paper presentations, discussions at different sessions of the seminar, the participants agreed upon the following conclusions/recommendations:

1. We recognize that organic is an emerging opportunity for farmers, and enterprises.
2. Asian countries have different reasons to promote organic; and (in different scales, presently – 5 years horizons). If countries do not do so, we understand that countries may face larger problems/crisis of food insecurity, unsafe food supplies, health problems, unsustainable rural and agricultural development, environmental degradation, etc.
3. We understand that except, Japan, Korea and Taiwan, efforts of adopting organic in Asia are scattered /individual and many of the countries are in the process of framing national policies and strategies.
4. We recognize that Asian countries are at different levels of organic development and promotion and; therefore, there is much scope to learn from experiences of Japan, Korea, Taiwan, Sri Lanka, etc.
5. We further understand that institutional capacities (be it regulations, research, extension, manpower and physical infrastructure etc.) for organics are still poor.
6. We also recognize that there is general lack of knowledge and information about organic farming, which is an impediment in promoting better understanding of organic farming in the region.
7. We realize that governments of many developing countries are not giving the minimum incentives to farmers, NGO, SMEs, etc involved in organic agriculture of the region.

8. We understand that there is a general lack of harmonization of standards for organics across Asian nations, which will limit trade and sharing of experiences on regulations and standards.

To address above issues and problems, we the participants forward the following general suggestions/recommendations.

1. APO puts organic farming and enterprises development on its priority program list, so as to enable APO member nations; facilitate building of knowledge and information, facilitate human resources development, facilitate studies in countries to help them frame their organic strategies, organize trainings on organics.
2. APO to organize observational study missions from developing countries to developed countries such as Japan, ROK and ROC to observe state-of-the-art practices of organic agriculture. Similarly APO should organize training course on organic agriculture for developing countries.
3. Relevant agencies in Asian countries should take initiatives to form an Asian Organic Platform to facilitate regular exchange of knowledge and experiences.
4. Individual countries should recognize this emerging opportunity for socioeconomic development of small farmers in marginal rainfed areas, sustainable rural development, as well as for safe food supplies to the citizens; and for environmental protection and rehabilitation.
5. Countries need to take steps to allocate resources and manpower to strengthen existing institutions / agencies or even create new organic R & D institutions/ agencies.
6. Organic farmers and NGOs have been the pioneers of organic movement in Asia so far. Therefore, they be given due respect and place in building partnership while planning strategies to promote organics.
7. Organic farmers/growers/enterprises will remain disadvantaged unless systems are set in place to provide them with equivalent and even more incentives when compared with input-intensive agriculture. In this regard, direct payment of incentives, as being followed in Korea, is a case worth studying to see whether such an approach be adopted by other Asian nations, with due modifications to suit conditions in their countries.
8. Organic marketing is in its infancy. There is need to continue steps to build domestic markets of Asian countries, as well as help build channels for international trade- channels.

9. Ways should be found for cheaper certification systems that developing Asian countries can afford and apply.
10. The standards for certification of organic products need to be harmonized at regional/international level.