Crops, Browse and Pollinators in Africa:

An Initial Stock-taking

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produced by the
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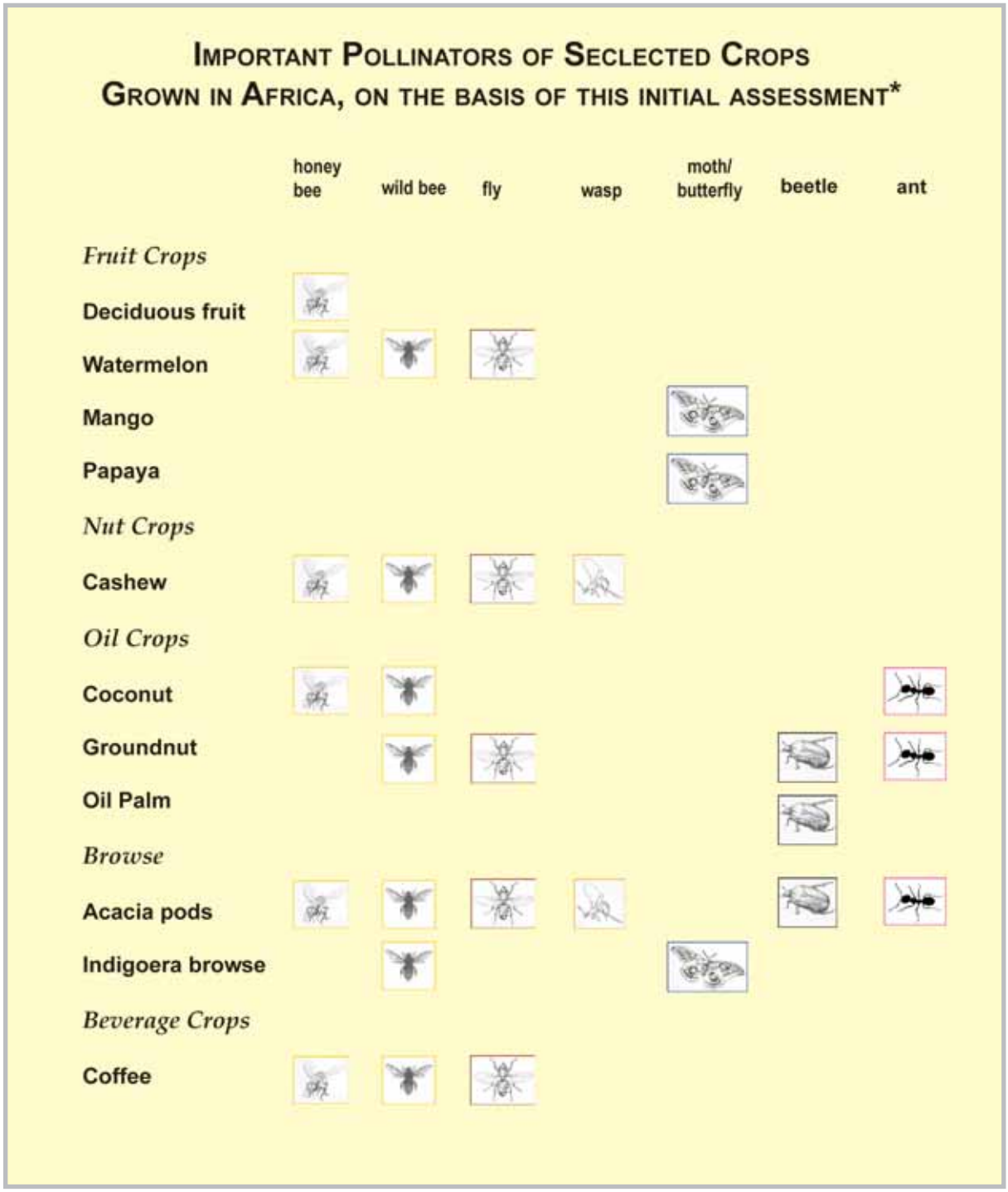

** note that in none of the systems studied did vertebrate pollinators play a documented role.*

Preface

When the Fifth Conference of the Parties to the Convention Biological Diversity established an International Initiative for the Conservation and Sustainable Use of Pollinators (also known as the International Pollinators Initiative-IPI) in 2000 (COP decision V/5, section II), FAO was requested to facilitate and co-ordinate the Initiative in close co-operation with other relevant organisations. A Plan of Action for the IPI was adopted at COP 6 (decision VI/5), providing an overall structure to the initiative, with four elements of assessment, adaptive management, capacity building and mainstreaming.

FAO, through the FAO/Netherlands Partnership Programme, supported the initial establishment of a regional African Pollinator Initiative, the development and publication of its Plan of Action in 2003, and an initial stocktaking of pollinator-dependent crops and browse plants in Africa. The stocktaking document has only been available in electronic form; support from the Government of Norway has permitted its publication in 2007.

We hope that the information contained in this stocktaking document will inspire others to make assessments of pollination services in their countries or regions as appropriate. We would encourage those that do so to share these with FAO for wider dissemination, through the following address: pollination@fao.org.

Linda Collette
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Summary of Lessons Learned

Lessons learned . . .

in South African pollination assessments

Honeybees were essential as pollinators of the five orchard crops; some exotic weed species were beneficial to indigenous pollinators especially honeybees in supplying nectar and pollen; but the greatest variety and numbers of pollinator species were present on indigenous flowering plants.

Lessons learned . . .

in Ghanian pollination assessments

In Ghana, farmers would appreciate more extension information on pollination services.

In a rapid assessment of crop pollination, it was found that even though honeybees visit mangos early in the morning, the main pollinators of mango seem to be various fly species, which remain on the little flowers most of the day. Cashew had wider species diversity of pollinators, while for oil palm beetles are the main pollinators. The main pollinator of Coconut are stingless bees, some wasps and other small bees. Flower visitors to groundut were noted, including halictid bees

Lessons learned . . .

in Kenyan pollination assessments

In Kenya, it was found that farmers' knowledge of pollination is limited: many farmers lump pollinators together with insect pests, and do not explicitly manage to conserve them, although pollinators may contribute substantially to yields at no cost to the farmer. Most researchers working on projects related to pollination are addresssing bee-keeping, or bee taxonomy. Other aspects of pollination services are not being addressed.

In a rapid assessment of crop pollination needs, it was noted that while bees that nest in cavities are often considered the most manageable, non-honeybee pollinators of watermelon made use of on-farm conditions to nest in the field soil. Conditions promoting them to nest could be studied and utilised to increase watermelon pollination. Papaya needs pollinators able to fly long distances between scattered trees with separate male and female blossoms. Recommendations for conserving the hawkmoths that pollinate papaya effectively are needed. Although avocado is an exotic tropical fruit to Kenya, its reproduction has adapted well to a diverse range of local pollinators. Coffee producers do not seem to be aware that pollination can increase yields, and are removing habitat on farm for wild bee populations.

Browse pollinators are important, but often overlooked. Most of the important Acacia pollinators nest in dead wood, making room for low-tech pollination management in that farmers that depend on this resource should not denude the areas of dead wood. Many crop and browse pollinator species could only be identified to genera. This severely limits our ability to assess whether they are shared amongst several crops, or specific to individual crops.

Introduction

Pollination is an ecosystem service that is key to food security. Pollinators are essential for many fruit and vegetable crops. In agriculture, especially amongst pollen-limited crops, promoting pollination services is a means of increasing productivity without resorting to expensive agricultural inputs of pesticides or herbicides. Indeed, pollination services are most likely underpinning productivity in many crops without farmers even recognising it, so long as habitat and alternative pollinator forage are readily available as they often are in smallholder farming systems.

By developing larger and larger fields and landscapes for agriculture, we remove the habitat that pollinators may need. Increasing dependence on pesticides for pest control is also highly detrimental to beneficial insects such as pollinators, unless planned and undertken with extreme care. Pollination is a service nature provides that we have tended to take for granted, and that we often do little to encourage until we start to lose it. As wild ecosystems are increasingly converted to more human-dominated uses to meet the compelling demands of food security, it is critical for us to understand what pollination services are most important for food security, and how we can preserve pollinator services in sustainable farming systems.

A crop's pollinator dependence differs between species, including between crops and crop varieties. Some plants must be cross-pollinated, others do not need pollinators but produce better fruit and seed if pollinated, and a number are strictly self-pollinated. Further, plants differ in their pollinator-type requirements; some require specific pollinators while others are pollinated by a variety of visitors, and many are wind pollinated. Effective pollinators of the same crop may vary from one site to another. Specific knowledge on pollinator dependence and types is important for agriculture and biodiversity (including agro-biodiversity) conservation. With this objective, researchers in Ghana, Kenya and South Africa were supported by the United Nations Food and Agriculture Organisation in 2003 to undertake an initial assessment of pollination needs and gaps in knowledge of the key pollinators of a few crops, and indigenous plants used by people or livestock (*Acacia* and *Indigofera*), in their respective countries. This assessment included both literature reviews and field observation; and is on-going. The long-term aim of assessments is to identify the key pollinators and prioritize vulnerable pollination systems, in particular those in which explicit pollinator management practices can have the most beneficial impacts. As the African Pollinator Initiative plan of action has specified, methodologies were used that must give results that are scientifically justifiable, and comparable.