

## Pollinators are vital and valued agricultural input to boost the Organic Mission of Karnali Province

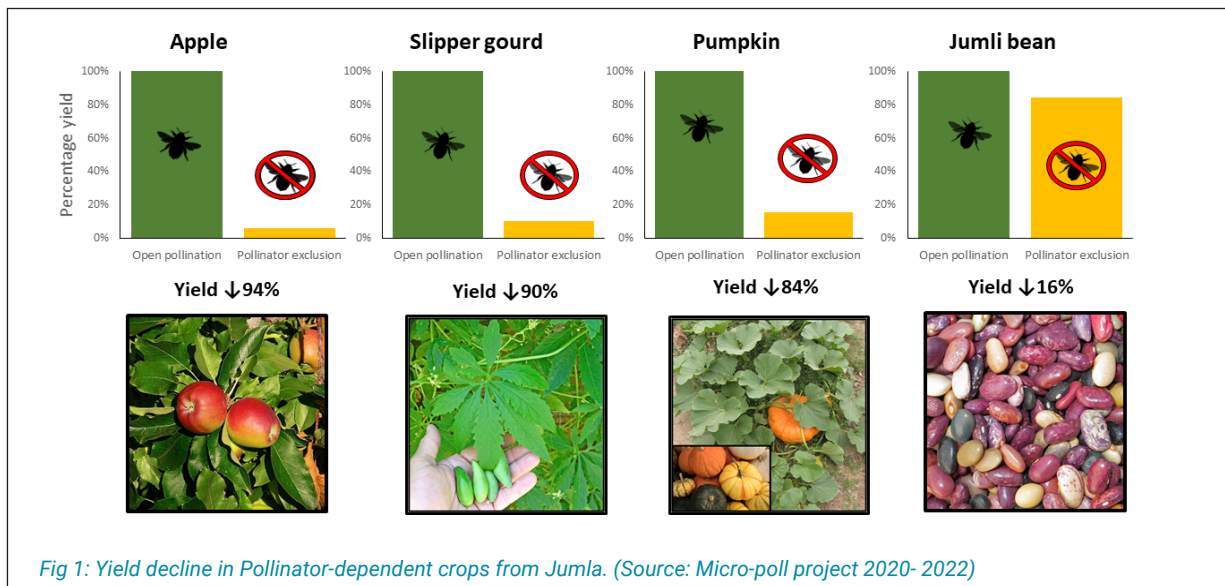
### Executive Summary

Most crops require pollination by insects to produce fruits and seeds. Pollination can enhance yields more than fertilizer in some cases, but farmers are not adequately managing and promoting this free agricultural service. In Karnali, 70% of crops are pollinator-dependent<sup>1</sup>, but most farmers lack the awareness and skills to manage pollination, therefore reducing their yield potential, livelihoods and food security. Similarly, governmental programs and policies are overlooking the importance of pollinators in agriculture. Government extension workers and agricultural training centres would therefore benefit from enhanced pollination awareness and capacity development. Pollinators are a crucial component of organic agriculture as they enhance crop yields, even in the absence of chemical inputs. However, pollination has not been integrated into the Organic Karnali Strategy or any other policy framework. We highlight the urgent need for a policy-focused Pollinator Strategy to integrate pollination management into the agricultural systems of Karnali Province, providing long-term benefits to farmers, biodiversity and the economy.

### Background

Pollination is an essential service for the reproduction of 75% of global crops<sup>2</sup> and 80% of wild plant species<sup>3</sup>. Pollinating insects such as honeybees, wild bees, bumblebees, flies and wasps are declining worldwide, posing a threat to this crucial but freely available service. Increasing insect numbers through pollination service management can increase the yields of many nutrient-rich crops including fruits, vegetables, nuts and seeds, thereby enhancing

food and nutrition security. Pollination promotion can also have a significant impact on income through increased yields of cash crops as well as honey sales from beekeeping. Pollination services are free to farmers and yet they are not being adequately utilized due to lack of awareness and pollination management skills. This limitation is hindering farmers from reaching their maximum attainable yield.



Pollination is particularly important for Karnali province as it has high number of pollinator dependent crops but struggles with food and nutrition insecurity and low income. UNDP has classified only 23% of the Karnali population as food secure<sup>4</sup>. In this context, increasing the abundance and diversity of insect pollinators will help to resolve food and nutrition insecurity and increase agricultural income in the province. In Karnali, 53 out of 76 commonly grown crops (70%) depend on insect pollination for their yields. This includes some of the most economically and nutritionally important crops such as apple, slipper gourd, pumpkin and even beans to some extent (**Figure 1**). A study conducted by the Micro-poll project in Jumla found that the crop yields, economic income and nutrition of farming households were highly dependent on pollinators (**Box 1**).

#### Box 1: Evidences from the Micro-Poll project, Jumla

- **Insect pollinators are in decline in Jumla.**  
90% of beekeepers reported declines in honeybee populations and honey yields  
**If declines continues:**
- **Household income could fall by up to 50%.**  
Primarily from loss of apple production and honey sales
- **Household nutrition and food security will suffer.**  
Reduced consumption of nutritious foods like Jumli beans, pumpkin and buckwheat

Despite the crucial importance of pollinators for enhancing our agricultural systems, there are major gaps in awareness and capacity to manage pollinators at various tiers from grassroots to policymakers. Pollination should be a central pillar of organic farming, but is absent from all provincial and national-level policy strategies which limits our ability

to manage this important service. We are also guided by certain myths regarding pollinators, which undoubtedly play a crucial role in our misconception regarding the issue (**Box 2**). To safeguard pollinators and capitalize on the enormous agricultural benefits they offer, we need to develop a coordinated policy strategy to integrate pollination management into all tiers of their agricultural system of Karnali Province.

#### Box 2: Correcting myths about Pollinators

- Honeybees are not the only pollinators – many wild insects such as bumblebees and flies are even more effective.
- Pesticides are not the only threat to pollinators – habitat loss and agricultural intensification are a severe threat too.
- It is not only cross-pollinated crops that benefit from pollinators, the yield of many self-pollinated crops like beans are also increased by insects.
- It is not too late to act – we can rapidly reverse pollinator declines if we act fast!



*Fig 2: Flies, wasp and beetles (left to right) are important crop pollinators.*

### What is driving pollinator declines?

Pollinator populations are declining around the world including in Karnali Province owing to various factors such as agricultural intensification, use of pesticides and herbicides, climate change, over-grazing and the spread of disease.

**Agricultural expansion and intensification** destroys the native habitat where pollinators live and reduces the diversity of crop flowers and wildflowers which provide pollinators with food.

**Pesticides** are poisons to insects - they kill pollinators as well as pests. By killing weeds, they also reduce the food supplies for pollinators.

**Climate change** disrupts the lifecycle of insects and the extreme heat and rain impacts their survival.

**Overgrazing** by livestock removes all of the important flowers and grasses which pollinators need for food and habitat.

**Disease** of honeybee hives results from poor management and the unregulated movement hives. This can drive major mortality in honeybees and wild bees.

**Box 3: What happens if pollinators are lost?**

- **30% decline** in global food production<sup>2</sup>
- **Collapse of native ecosystems** which support our health, livelihoods and wellbeing<sup>3</sup>
- **40% decline** in Vitamin A production<sup>6</sup>
- An extra **1.42 million deaths** each year<sup>7</sup>

**If pollinator declines continue, they could reduce Nepal's economic revenue by 30% resulting in the loss of NPR 33,000 each year for every individual person in the country.<sup>5</sup>**

**The solution:** There are many promising strategies for reversing pollinator decline including bottom-up management actions by farmers, and top-down policies at a local, provincial and national-level. To be effective however, these strategies need to be integrated into existing policy frameworks and extension services through a coordinated Pollinator Action Plan.

**Which existing acts, policies, and programs can pollination management be integrated into?**

The Karnali government has provisioned various plans, programs and policies, especially targeting agriculture development in the province. After the federal restructuring process, the Karnali government has endorsed the Karnali Province Organic Agriculture Act, 2076 BS; Food Security and Sovereignty Act, 2077 BS; Province Environment Act, 2077 BS, Agribusiness Promotion Act, 2079 BS, among others. In addition, there is also a separate Bees Promotion Policy, 2073 BS focused on promoting managed honeybees at a national level.

Karnali Province Organic Agriculture Act, 2076 BS	Food Security and Sovereignty Act, 2077 BS	Province Environment Act, 2077 BS	Bees Promotion Policy, 2073 BS
<ul style="list-style-type: none"> <li>• Its objective is to ensure constitutional rights toward safe organic food, and also maintain human health and ecosystem functioning, soil fertility and productive capacity.</li> <li>• It prohibits synthetic chemicals in organic farming. It promotes biodiversity to enhance the provisioning of ecosystem services such as pest management. It also promotes integrated farming, which benefits a wide range of biodiversity.</li> <li>• However, it does not clearly specify the importance of pollination and outline how this service can be enhanced.</li> </ul>	<ul style="list-style-type: none"> <li>• Its objective is to enhance food security and sovereignty of citizens by increasing availability and access towards quality food as well as to protect and promote local production in Karnali province.</li> <li>• It dictates for judicious management of pasture and agricultural land, which can benefit the pollinators with the availability of various types of crops, flowering plants and grasses in the province.</li> <li>• Again, it does not specify anything about pollinators and how they can be supported.</li> </ul>	<ul style="list-style-type: none"> <li>• Its objective is to ensure citizens' rights to live in a clean and healthy environment, and maintain balance between development and the environment.</li> <li>• It provides a climate adaptation plan for agriculture and forestry. By promoting agrobiodiversity and forest quality, this act is likely to benefit pollinators by increasing habitat quality and food sources.</li> <li>• It also specifies nothing about pollination related measures directly.</li> </ul>	<ul style="list-style-type: none"> <li>• Its objective is to promote beekeeping practices and enhance pollination services through conservation of managed honey bees.</li> <li>• It promotes beekeeping, as well as the provision of suitable forage, regulation of beehive movement, habitat protection, beekeeper subsidies, outreach and extension work, and funding research on beekeeping.</li> <li>• However, the act focuses primarily on managed domestic bees, with little provision on wild pollinator needs.</li> </ul>

It is notable that all these acts and policy documents do not address pollination, despite its obvious alignment with these strategies. Instead, they only possess certain guidelines that could possibly create favorable environments for pollinators. To be precise, the provincial government is yet to introduce policies and strategies for recognising pollination services and incorporating them into their institutional set-up and extension services. It highlights the urgent need to develop a set of policy guidelines and plans that explicitly relate to securing pollination services and promoting pollinators (both wild and managed).

## What we should do?

This condition flags up the necessity of an appropriate policy or strategy document that includes clear actions to safeguard pollinator populations and enhance crop pollination services. This vision aligns very closely with the 'Organic Mission' of the Karnali government, and thus can generate substantial interest from the provincial government and Karnali population. Pollination promotion requires generating additional evidence by collaborating with research and academic institutions such as Nepal Agriculture Research Council (NARC), Mid-West University and Agriculture and Forestry University (AFU).

The policy strategy should include a number of detailed evidence-based recommendations to conserve pollinators and promote pollination management by restricting the most damaging impacts of agricultural intensification, regulating the use of harmful pesticides, conserving and promoting natural habitats, crop diversification, raising awareness amongst farmers, supporting sustainable beekeeping, and building the capacity of agricultural trainers, researchers and extension workers.

## Conclusion

Pollinators need a massive promotion as an agricultural input offered free of cost by nature. This should be taken as an urgent action, and it requires policy level integration with specific actions on pollination management. We propose the development of a comprehensive Pollinator Strategy, with concerted efforts from various stakeholders such as Karnali government (MoLMAC, Agriculture Development Directorate, Agriculture and Livestock Business Promotion Training Center, etc.), academic and research institutions, and national and international non-government organizations.

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