

ORGANIC AGRICULTURE IN NEPAL: POLICIES AND PRACTICES

P. Baral^{1*}, R. Paudel², S. Kharal³ and A. Khadka⁴

¹Jibika College of Agricultural Science, Itahari, Nepal

²Institute of Agriculture and Animal Science, Tribhuvan University, Nepal

³Agriculture and Forest University, Nepal

⁴Directorate of Agriculture Development, Province No. 1, Biratnagar, Nepal

*pra.br138742@gmail.com

ABSTRACT

The extensive use of agro-chemicals deemed the conventional agricultural system of Nepal as unsustainable, regarding which organic agriculture seems as a realistic alternative, which lays its major focus on sustainable production system rather than on productivity. It has been gaining huge interest and is being widespread in contemporary context. In this regard, the paper attempts to outline the status and practices of organic agriculture in Nepal. Highlighting the major policy initiatives taken for promoting and advancing organic agriculture in Nepal, the paper also brings in light the relevancy of global agenda Sustainable Development Goals 2030 and other international conventions for prioritizing organic agriculture in Nepal. Though being determined in the direction of organic agriculture, contradictory decisions and policies deterring organic agriculture continue to emerge in Nepal. The paper, thus, highlights those deterring policies and identifies the major policy gaps hindering the growth of organic agriculture in Nepal. Presenting the case of ambitious mission of Karnali province to gradually transform itself to fully organic province, the paper assesses the major constraints for organic agriculture and suggests some policy recommendations that needs to be addressed to further its growth and development and eventually develop a sustainable food production system to ensure the long term national objectives of food security and inclusive economic growth for healthy and quality life of all Nepalese.

Keywords: *agro-chemicals, conventional agriculture, policy gap, sustainable production*

INTRODUCTION

Considering the human expansion and its heavy dependence on agriculture for food, farmers in conventional agriculture system arrogated the use of agro-chemicals (fertilizers and pesticides etc.) extensively as a strategy to lift the agricultural productivity which led to the serious consequences on environmental and health hazards on one hand while further depleting the pool of indigenous knowledge regarding agricultural practices on the other (Scialabba, 2000) thus, forging our present agricultural system unsustainable. This arose concerns for sustainable agricultural system, regarding which, the concept of organic agriculture presents itself as a viable and feasible alternative, shifting the focus of agricultural system from productivity oriented to sustainability oriented, making it agro-ecologically friendly production system (Pokhrel & Pant, 2009).

One of the several approaches to sustainable agricultural production system, organic agriculture is gaining huge attention in contemporary context, which is characterized for being ecologically safe, economically viable, socially acceptable, technologically simple and just. Simply understood as an agricultural production system that discourages and restricts the use of agro-chemical inputs for production, organic agriculture promotes the sustainable ecology and ecological systems, establishes safe, quality and secured food system and ensures the welfare and social justice of all living beings, without any discrimination. IFOAM defines organic agriculture as '*a production system that sustains the health of soils, ecosystems, and people. It relies on ecological processes, biodiversity and cycles adapted*

to local conditions, rather than the use of inputs with adverse effects. Organic Agriculture combines tradition, innovation, and science to benefit the shared environment and promote fair relationships and good quality of life for all involved. Widely accepted as the holistic production management system prioritizing the agronomic (cultural), biological, mechanical and physical management practices and methods for farm inputs and operations and oppose the use of synthetic products, Genetically modified organisms (GMOs) and chemicals to fulfill any specific function within the agricultural system, organic agriculture envisages the optimization of health and productivity of interdependent components of agro ecology viz. soil life, plants, animals and humans and is based on the perception that *'tomorrow's ecology should be prioritized over today's economy'* (Pokhrel & Pant, 2009).

Thus, in this regard, this paper attempts to review the policy context, initiatives and practices of organic agriculture in Nepal and identify the gap between policy and practice. Presenting the case study of Karnali Province, it will visualize the further strategies and policy recommendation for mainstreaming organic agriculture in policy level to promote sustainable agriculture in Nepal.

MATERIALS AND METHODS

The paper is prepared based on the review of different reports, policies, plans and research articles related to organic agriculture in Nepal. Additionally, the preparation of case study of Karnali province involved the policy analysis and KII of personnel from Ministry of Land Management, Agriculture and Cooperatives, Karnali Province.

RESULTS AND DISCUSSION

Agricultural context in Nepal

Nepal is predominately characterized by traditional-knowledge based subsistence agriculture with diversified climatic and topographic variations and is richly endowed with agro-biodiversity (WFC, 2019). The agriculture system in Nepal involves the cultivation of diversified crops so as to adapt the erratic and unfavorable weather and agronomic conditions. It contributes about 29 percent of country's total GDP (MoALD, 2019) and is central to livelihood for more than 60 percentage of country's population (MoALD, 2020), thus implying that the transformation and development of this sector will have a decisive effect to ensure the national agenda of food security and poverty reduction (Gauchan, 2008). Agricultural land consists 28 percent of total country's area, under which only 21 percent land is cultivated while remaining 7 percent land is cultivable but left uncultivated. Similarly, the average size land holding in Nepal is about 0.5 ha and land fragmentation is emerging as a prime issue (MoALD, 2019).

Being an agrarian country, Nepal used to be a self-sufficient nation in food and net exporter of agricultural products until early 1980s. However, over past few decades the country has been facing the issues of pollution, climate change, lower agricultural productivity, deforestation, high incidence of natural calamities due to which the country has become food insecure with a high poverty rate of about 25 percent (WFC, 2019). Similarly, the social, political and environmental challenges, post federalism and Earthquake 2015, have also influenced the agriculture sector of Nepal.

The ambitious 'Nepal's Long Term Vision 2100 B.S.' has set its goal in achieving the international Sustainable Development Goals (SDGs) 2030 securing inclusive economic growth, developing quality human resource and minimizing the economic risks, and finally

upgrading to middle-income nation from least developed country by 2100 (NPC, 2018), thus ensuring a healthy and quality life for all Nepalese. Agriculture sector, being identified as one of the major pillars of national economy, needs to be prioritized to attain this ambitious vision. The recent global pandemic Covid-19 has affected the economic sector of Nepal, with the growth rate expected to be 0.5 percent (MoF, 2020) and the agriculture sector is also largely influenced by this pandemic with unavailability of inputs and marketing problems. This has called for the immediate response and designing of the long-term sustainable strategy to uplift the agriculture sector of country for overall development, for which the promotion and mainstreaming of organic agriculture seems to be realistic alternative to agricultural production system in Nepal.

Present status and efforts of organic agriculture in Nepal

Organic agriculture has commonplace in Nepalese context, where the agriculture system is organic by default. In the past, resource-poor and subsistent farmers practiced organic agriculture in traditional way by adopting integrated farming system comprising crop and livestock. Officially being promoted by government from 10th Five Year Plan (Tamang et al., 2011), however, the commercial form of organic agriculture in Nepal had started in the early 1990s (Singh & Maharjan, 2017). Although most of the land in high hills and rural regions is devoid of agrochemicals, the officially certified land for organic farming is around 11, 951 ha in Nepal which is only around 0.3% of the total cultivated land area (FiBL & IFOAM, 2020).

Though accounting a small portion in area and relatively lower production, it is gaining momentum in contemporary times for its economic feasibility and ecological sustainability. There is increasing trend in interests and initiatives taken by governmental sectors such as Department of Agriculture (DOA), Nepal Agriculture Research Council (NARC), Institute of Agriculture and Animal Science (IAAS), Agriculture and Forestry University (AFU), Tea and Coffee Development Board, Kathmandu Metropolitan etc., non-governmental sectors such as Winrock International, Nepal Permaculture Group, SECARD etc. and community-based organizations for engagement and promotion of organic farming at different levels (national, regional, local). The demand of organic products in Nepalese market is intensifying and consumers are willing to pay higher price for the organic commodity (Bhatta et al., 2009).

Currently, the support and services related to organic farming are very limited. There is minimal research regarding the appropriate technology generation and dissemination regarding organic farming in Nepal (Tamang et al., 2011). Extension services are limited to creating awareness and training programs on organic farming (Vaidya, 2006). Furthermore, professional institutional support is also weak and non-functional for assisting organic growers in production, post-harvest, certification, processing and marketing functions of organic products (Bhat, 2009). Despite some private sectors and NGOs fulfilling some of the technological needs regarding organic agriculture, different stakeholders are still demanding basic services and support for fostering the organic methods of crop production and marketing. Some of the growers are receiving subsidies for inputs and export, but they are minimal (Gauchan et al., 2020)

Regarding the marketing of organic products, various supermarkets, farmers market, organic retail chains had some hotels and restaurants selling organic products. These are located in urban areas of major cities like Kathmandu. In recent times, a growing number of online market sellers are also offering organic products to the consumers. The traders and

retailers collect these products from rural areas or from organic growers and sell these to their valid consumer base in urban areas (Yadav, 2004). Besides this, some traders and collectors are selling high value agricultural commodities and medicinal herbs in foreign countries through organic certification (Gauchan et al., 2020). The formal market for selling of organic produce is still not well-structured and many traders are selling the organic products without certification. A survey in Pokhara revealed that only 13% of the interviewed producers and 27% of the traders participating in an organic fare were certifying their produce as organic (Gauchan et al., 2020).

Jumla was declared as the first “Organic district” of Nepal in 2007 and the use of agrochemicals for agricultural production was banned in this district (Lewison, 2019). This was done with the aim of selling apples, beans, potatoes, millet, Jumli rice, buckwheat, barley etc through organic certification leading to higher profitability for farmers. However, due to various administrative and legislative reasons, only apples are certified and sold as organic products till date (Atreya and Kafle, 2016). Also, various problems in production have occurred due to banning of the agrochemicals (Palikhey et al., 2017).

Therefore, with the increase in consumer awareness, development of the infrastructures and consumer’s willingness to pay for organic products, the scope of organic farming looks promising for the future. For this to develop properly, the country has to take proper decisions regarding the organic agriculture in policy and legal frameworks.

Policy initiatives for organic agriculture in Nepal

With Agriculture Perspective Plan implemented as guiding policy for agriculture sector in Nepal for two decades (1995 to 2015) which mainly aimed at achieving increased agricultural economic growth through priorities on intensive use of limited inputs essentially non-organic, most periodic plans, policies and strategies of Nepal were to be developed in line of APP objectives (Pokhrel & Pant, 2009) and thus, were apathetic towards organic agriculture.

However, the *Tenth Five Year Plan (2056/60-2063/64)* for the first time prioritized promotion of organic agriculture in Nepal officially (Tamang et al., 2011). The *National Agricultural Policy, 2064* also had the policy statements and objectives for encouraging and promoting organic agriculture, supporting organic product certification, and minimization of adverse effects of agrochemicals in land, water, environment and livestock. Further, it focused in improving the production and usage of organic manures and fertilizers, enhancing local participation in quality food management and regulating the use of pesticides and GMOs in agriculture in an attempt to modernize organic agriculture in Nepal (MoAD, 2004).

With these policy initiatives, organic agriculture continued to attain special attention in major policies, plans and strategies. The *Agriculture Development Strategy, ADS (2015-2035)* has been implemented with four major strategic components, viz. governance, productivity, profitable commercialization and competition and focus on self-reliance, sustainability, competition, inclusion, economic growth, improved livelihood and food and nutrition security for the sustainable and inclusive development of the agricultural sector in Nepal by involving the private and cooperative sectors as major players of agricultural development in Nepal. Under the component of high productivity, the strategy has provision to increase the use of organic and organic manure and to gradually displace chemical farming. Similarly, for Sustainable Farming and Good Agricultural Practice (GAP), it provides basis for conducting organic agriculture promotion programs in coordination with the private sector (MoAD,

2015). It also recognizes organic branding as a possible component in increasing the competitiveness of the Nepalese agricultural sector and aims to promote community-based seed production, supporting integrated systems such as agroecology, promoting extension services in organic agriculture, production of organic inputs and subsidies for purchasing organic fertilizers to promote organic agriculture in Nepal.

The newly implemented *Constitution of Nepal, 2015* has devised certain provisions regarding the agriculture sector of the country, which creates space for organic agriculture too. Under food related rights in Schedule 36, there are provisions for right to food and food sovereignty, which paves the path for sustainable food production and management system. Organic agriculture is the viable alternative for sustainable food production system. Similarly, Schedule 51 related to land rights and land management attempts to promote the judicious land use that would balance the nature and promote the ecological health and ecology. This also creates huge space for organic agriculture which is eco-friendly in nature.

The *Fifteenth Five Year Plan (2076/77-2080/81)* aims to create a sustainable, competitive and prosperous agricultural economy with food and nutrition security and food sovereignty in the region and has devised 3 objectives for the same, viz. to increase agricultural production and productivity, to increase employment and income by developing agro-based industries and to develop the commercialization and competitiveness of agriculture sector for the balance of trade (NPC, 2019). The plan, under its fifth strategy to make the production and marketing profitable by enhancing the technical, commercial and institutional capacity of the productive farmers based on local potential and ensuring their rights, has targeted to establish at least two model integrated organic farms in each state. Similarly, for developing and expanding agricultural technologies and minimizing the negative impact of climate change and disasters (strategy 7), the plan has promoted organic agriculture as suitable alternative for climate adaptation in all its four working strategies under this strategy.

The election manifesto of ruling party (CPN) mentioned the target to make Nepal a chemical and pesticide-free country within ten years and the ministry also allocated a total of NRs. 520 million (approximately 4 million EUR) for promoting organic agriculture during the fiscal year 2018-19.

The *Fiscal Budget Speech, 2077* presented by the Government of Nepal has also devised the legal framework for promotion and regulation of quality food production, organic production and organic product branding. It has also made provisions for encouraging organic and contract farming through Land Bank by providing subsidies. Also, there is provision of subsidy for promoting organic fertilizer production and usage (MoF, 2020).

In addition, different programs and policies like PMAMP, HVAPP, National Biosafety Framework 2006, Digital Nepal Framework 2018, Agro-biodiversity Policy 2007 (updated 2014), National Biodiversity Strategy and Action Plan (NBSAP) for 2014-2020, Climate Change Policy 2011, National Adaptation Plan (NAPA) 2018 etc. also have prioritized to develop and modernize organic agriculture in Nepal.

Moreover, the Ministry of Agriculture and Livestock Development (MoALD) formulated a high level committee chaired by Ministers and including various stakeholders in 2019 including various stakeholders and farmers to analyze and formulate strategies to address the current needs of soil nutrients through organic agriculture in 2019 and organized an International Organic Experts' Conference. In addition, the Nepal government has formed a 15-member Committee (named *High Level Taskforce/ Committee on Organic Promotion in*

Nepal) to develop a proposal for a holistic program that guides the development of organic agriculture over the coming years.

International provisions/conventions favoring organic agriculture and Nepal's commitment

Nepal has adopted a policy of adhering to the global *Sustainable Development Goals 2030*, under which organic agriculture can be enhanced and promoted. Given the high incidence of poverty, food insecurity and low agricultural productivity in the country, there is room for doubling of agricultural productivity, ensuring sustainable food production systems, implementing resilient agricultural practices and maintaining genetic diversity of seeds, plants, animals and their related wild species by establishing seed and plant banks at regional, national and international level (SDG 2 and 12). Also, there is need of the promotion of climate friendly agriculture system for climatic adaptation (SDG 13). Similarly, conservation, rehabilitation and sustainable use of the terrestrial environment through proper and scientific land use and management and promotion of sustainable forest management are also prioritized area under SDG for Nepal (SDG 15). All these aspects create potential for organic agriculture. Organic agriculture not only assists in sustainable food production system, but also conserves ecological diversity, increases climatic adaptation in agriculture and promotes sustainable land use and management. Therefore, Nepal's commitment for adhering to SDG can provide a new direction and pathway for developing organic agriculture in Nepal.

Similarly, Nepal has ratified to different conventions like United Nations Convention to Combat Desertification (UNCCD) in 1994, United Nations Convention on Biological Diversity (UNCBD) in 1993, the Cartagena Protocol on Biosafety in 2001, United Nations Framework Convention on Climate Change (UNFCCC) or Kyoto Protocol in 2005 and the Paris agreement in 2016. All these conventions are directly concerned with organic agriculture.

Policies that deter organic agriculture

Although the country is in direction of transiting to organic agriculture and different policies have prioritized organic agriculture as mentioned above, however, there are some detrimental policies being implemented in the country that contradict with organic agriculture. The policymakers are still assuming the promotion of increased adoption of synthetic fertilizers as better way to boost agricultural production and ensure food security, so the policies for subsidies on chemical fertilizers are still continued today. This has increased the use of synthetic chemical fertilizers consistently over years (Pandey et. al, 2017). ADS also highlight the accessibility and availability of chemical fertilizers as major constraint for low agricultural productivity. Though, government is being more aware about the challenges of increased use of chemical fertilizers in health and environment and is launching the programs like vermicomposting, cattle shed improvement, organic fertilizer plant establishment, and price subsidy programs for organic fertilizers and pesticides to reduce dependency of nation on chemical fertilizers (Amgai et. al, 2017), however still their implementation is far behind than the support provided for chemical fertilizers (Bista et. al, 2016). Also, the decisions contradicting with organic agriculture continue to emerge, an example of which is the decision to establish a synthetic fertilizer factory in Nepal recently proposed in Nepal Investment Summit in April, 2019. Also, the use of genetically modified

organisms (GMOs) still is not functionally regulated. These programs and policies are certainly inconsistent with country's plan to be chemical and pesticide free country and the principles of organic agriculture.

Major gaps and constraints of organic agriculture in Nepal

Analyzing the policies and practices of organic agriculture in Nepal, there are certain gaps that need to be addressed to foster the development and advancement of organic agriculture in Nepal. Some of these gaps are:

1. There is no separate policy regarding organic agriculture and certification. The government has to rely on/endorsed the certification standards set by private sectors that are mainly voluntary and the National Regulation on Organic Production has not yet been enacted.
2. There is no separate functional and institutional body for inspection and certification of organic standards and products, which are making our organic products less qualitative and competitive in international markets.
3. There is no any policies and legal provision for branding of organic products of high export potential like coffee, tea, ginger etc. Recently, the cooperative association of Nepal took initiative to start branding of organic tea and coffee, but its further progress is unknown to date.
4. There are no adequate researches and studies in advancing organic methods for cultivation.

Apart from these policy gaps, there are certain constraints to organic farming in Nepal:

1. One of the major constraints is the misconception in people that '*organic agriculture is not feasible option to improve food security*'.
2. The high price of organic products is also a constraint which significantly affects its demand in national market.
3. There is no adequate support for timely supply of organic inputs such as seeds, bio-fertilizers and bio-pesticides and where available, the price of such inputs are quite high leading to significant increase in price of the commodity produced
4. Lack of adequate information of different aspects such as advantages of organic agriculture and the organic products, crops and area on organic cultivation, technology, marketing, suppliers of input, etc.
5. Organic agriculture is labor intensive farming. So, in the urban areas where there is scarcity of labor, the cost of cultivation may be high.
6. The institutional framework and infrastructure currently in place is quite inadequate for proper transportation and competition in the international markets.
7. The certification process itself is expensive and unaffordable to the majority of the small holder farmers.

Recommendations for promoting organic agriculture in Nepal

Certain measures need to be taken to develop organic agriculture as realistic alternative to conventional agricultural system in Nepal and encourage farmers to adopt it. For this, following policy recommendations could be useful:

1. Strong policy and legal framework for organic inspection, certification and branding.
2. Separate and fully functional institutional framework to monitor and regulate organic standards and procedures in Federal, provincial and local levels.

3. Increased subsidy and governmental support for organic fertilizer/pesticides production and supply, the high subsidy provided for synthetic agro-chemicals could be shifted towards improving the production and supply of their organic counterparts.
4. The recent program regarding Land bank could be integrated with organic agriculture, i.e. governmental support and subsidy could be promoted for those practicing organic agriculture through Land Banks.
5. Government can build stronger synergies with different stakeholders, remove conflicting objectives, and address missing pathways for fostering the advancement in organic agriculture.
6. The linkage of research-extension-education needs to be strengthened to address the gap of adequate studies on organic agriculture and advanced technologies needs to be introduced through their effective collaboration to modernize organic agriculture.
7. Special support should be devised to reduce the cost of production of organic products. For this, subsidy can be provided based upon the volume of production to motivate the farmers for easy marketing of the products.
8. The competition of Nepalese organic products needs to be increased in national and international level through proper regulation, inspection and certified branding in national level.
9. Devising the holistic and inclusive approaches through cross-ministerial collaboration to implement and promote organic agriculture.

Case Study: Karnali Province: A step towards establishing itself as model organic Province in Nepal

The Government of Karnali Province (GoKP) has enacted a ‘Policy and Development Program’ in 2018, which outlines the ambitious provincial aim of gradual transformation into a fully organic province and has endorsed the Organic Agriculture Bill which will guide the province in its mission. Initiatives have already been taken and the local governments have been assigned with responsibilities of prioritizing the investment in necessary area like capacity building, producing organic inputs and ensuring their timely availability, improving organic seed and product quality and linking organic agriculture with tourism. Organic fertilizer plants, agro mechanization and organic pesticides factories are being promoted and established in public private cooperative partnership. ‘Increased organic agriculture, Prosperous Karnali’ slogan is being used as main motto for organic agriculture development and different schemes and programs like ‘One local level one model organic farm’ and ‘one cooperative one model agriculture, livestock and fisheries farm’ has been already implemented. There is provision for up to 70% subsidy for implementation of organic farm as per the standards set for evaluation and rewarding the best farmer for encouraging and promoting organic agriculture in the province. Agriculture Knowledge Center and the revived District Agriculture Development Offices (DADOs) are collaborating with provincial government for strengthening the institutional support that would be required for developing organic agriculture.

The transition is being piloted in five Himalayan districts and organic production of commodities, such as walnuts, apples and other indigenous product are prioritized which are targeted to export to foreign country and increase provincial revenue. This program is built on the previous experience of the Jumla district in 2007 when DADO of Jumla decided to transform the district into organic district, which is a part of the Karnali province. The

import and use of chemical fertilizer in province has been strongly regulated and minimized following the decision and the province is preparing to develop the value chain of organic products with aid from donor agencies, private sectors and other key stakeholders. The program activities include trainings on production, support for certification, facilitating marketing of organic products, brand marketing etc.

However, the inefficient collaboration between federal, provincial and local government and the ambiguities of programs and authorities of these governments could be major constraint for this ambitious aim of the province. Next to that, the weak institutional and legal framework for organic agriculture and its procedures, inadequate human resource to provide technical guidance to farmers about organic agriculture and structural and institutional barriers could be problematic for the province regarding its mission. Hence, it is necessary for province government to strengthen its institutional and human capacity and collaborate with federal and local levels to achieve its mission. Inclusive and holistic approaches should be devised with active participation of all key stakeholders and necessary support (technical, financial, subsidy, infrastructural, marketing etc.) should be made available for farmers engaging in organic agriculture.

CONCLUSION

Traditional subsistence agriculture practiced in the mountainous regions and rural areas of hills in Nepal, although not certified, has always been organic farming method. Because of the sustainability issues and human health benefits, the organic farming has been getting momentum in recent years. Various studies have shown that people are more aware about their health and environment and thus, are willing to pay higher price for organic products. This has resulted in a great scope for organic agriculture development in Nepal. However, currently the organic agriculture is not systematically built. The certified land area for farming is low, no new technologies are generated, there is lack of research and policies and regulations on organic farming are inadequate. Despite this, crops like Jumla apple, tea, coffee, large cardamom, ginger, beans, buckwheat, fresh-vegetables, honey and herbal products are sold in local and international markets to some extent. Various plans, policies and programs have been implemented by the Nepal Government for developing organic agriculture. However, some provisions/policies with contradictory objectives have deterred the Nepalese agriculture from achieving its objectives in organic development. Besides, there are constraints like difficulties in certification, lack of governing body for organic agriculture, inadequate provision of branding, inadequate government support in inputs and marketing and labor scarcity which are also hindering the development of organic agriculture. Therefore, it has become imperative for the government to take some strong and bold decisions for proper and systematic evolution of organic agriculture in Nepal. Government can provide institutional support for the organic certification and branding combined with strong legal mechanisms for ensuring quality production, supply of inputs, research and technical support in organic farming which can play a vital role for proper development. Furthermore, a productive coordination between the farmers, organizations, agricultural offices, academic institutions and extension services can provide the ground for a strong movement in organic agriculture from Nepal.

REFERENCES

- Amgai, S., Paudel, S., Bista, D., & Poudel, S. (2018). Government intervention on organic fertilizer promotion: a key to enhancing soil health and environment. *Journal of Agriculture and Environment*, 18, 131-139. <https://doi.org/10.3126/aej.v18i0.19898>.
- Atreya, P. N., & Kafle, A. (2016). Production practice, market and value chain study of organic apple of Jumla. *Journal of Agriculture and Environment*, 17, 11-23.
- Bista, D., Dhungel, S., & Adhikari, S. (2018). Status of fertilizer and seed subsidy in Nepal: review and recommendation. *Journal of Agriculture and Environment*, 17, 1-10. <https://doi.org/10.3126/aej.v17i0.19854>.
- Bhat, B. R. (2009). Opportunity and challenge of organic certification system in Nepal. *Journal of Agriculture and Environment*, 10, 144-149.
- Bhatta, G. D., Doppler, W., & KC, K. B. (2009). Potentials of organic agriculture in Nepal. *Journal of Agriculture and Environment*, 10, 1-14.
- FiBL & FOAM (2020). The World of Organic Agriculture. Statistics and Emerging Trends, 2019. FiBL, IFOAM Report. Research Institute of Organic Agriculture (FiBL), Frick and International Federation of Organic Agriculture Movement (IFOAM), Bonn.
- Gauchan, D. (2008). Agricultural Development in Nepal: Contribution to Economic Growth, Food Security and Poverty Reduction. *Socio Economic Development Panorama*, 1(3), 49-64. ISSN 1999-3536.
- Gauchan, D., Palikhey, E., Sthapit, S., Joshi, B. K., Manandhar, H. K., & Jarvis, D. I. (2020). Organic Farming and Marketing of Traditional Crops in Nepal Mountains: Gaps, Issues and Opportunities for Improvement. *Traditional Crop Biodiversity for Mountain Food and Nutrition Security in Nepal*, 163.
- Lewis, E. (2019). Value Chains and Development Brokers: Engineering Inclusive Agricultural Markets in Jumla, Nepal. *South Asia: Journal of South Asian Studies*, 42(5), 903-919.
- MoAD. (2015). Agriculture Development Strategy (2015-2035). Ministry of Agriculture Development, Government of Nepal, Singh Durbar, Kathmandu.
- MoALD. (2019). Statistical Information on Nepalese Agriculture. Government of Nepal, Ministry of Agriculture and Livestock Development, Agri-Business Promotion and Statistics Division, Kathmandu, Nepal.
- MoALD. (2020). Krishi Diary: 2076/77. Government of Nepal, Ministry of Agriculture and Livestock Development, Agricultural Information and Training Center (AITC), MoALD.
- MoF. (2020). Budget Speech, 2077. Ministry of Finance, Government of Nepal.
- NPC. (2018). Nepal Long term plan, 2100. National Planning Commission, Government of Nepal.
- NPC. (2019). Fifteenth Five Year Plan (2076/77-2080/81). National Planning Commission, Government of Nepal.
- Pandey, G., Khanal, S., Pant, D., Chhetri, A. & Basnet, S. (2017). An Overview of Fertilizer Distribution Scenario in Nepal: A Time Series Analysis (1991/92-2015/16). *International Journal of Research in Agricultural Sciences*, 4(6). ISSN (Online): 2348 – 3997.
- Pokhrel, D.M. & Pant, K.P. (2009). Perspectives of Organic Agriculture and Policy Concerns in Nepal. *The Journal of Agriculture and Environment*, 10, 89-99.

- Scialabba, N. (2000, October 2). Opportunities and constraints of organic agriculture, A Sociological analysis. FAO. <http://www.fao.org/3/a-at713e.pdf>.
- Singh, M. & Maharjan, K. L. (2017). Sustainability of Organic agriculture in Nepal. Springer Publication. <https://doi.org/1007/978-981-10-5619-2>
- Tamang, S., Dhital, M., & Acharya, U. (2011). Status and scope of organic agriculture in Nepal. *Food and Sustainable Agriculture Initiative, Forestaction, Lalitpur*.
- Vaidya, B. (2006). The Organic Scenario in Nepal. APO seminar on Organic Agriculture for Sustainable Development.
- WFC. (2019, 2 September). The Mainstreaming of Organic Agriculture And Agroecology in the Himalaya Region: Policy Contexts in Bhutan, India and Nepal. WFC. https://www.worldfuturecouncil.org/wp-content/uploads/2019/09/Mainstreaming-of-Organic-Agriculture-And-Agroecology-in-the-Himalaya-Region_2019_web_version-1.pdf.
- Yadav, S. P. (2004). Organic Agriculture In Nepal: Country Report. In *6 th IFAOM-Asia Scientific Conference* (p. 22).