# Input Crisis in the Agricultural Sector of Nepal

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# Abstract

Amidst 21<sup>st</sup> century when agriculture is cherished with advancement in all kind of technology backed by multifarious dimensions of research and innovation internationally, the mainstay sector of Nepal still remains darker. Poverty, hunger and food deprivation have become common characteristics of the peasantry and the sector remains at a very marginal level in its productivity and total product. Import of agricultural product of millions of worth has become destiny of the country. In this line crisis in agricultural input supply is found as a major determinant. Precisely by inputs we mean essential commodities as chemical fertilizers (urea, potash and DAP), agricultural tools and machines, improved seeds and saplings, agricultural finance. As per provisions of such inputs Nepal is found weaker in almost all segments of procurement. The country still doesn't have any chemical fertilizer production unit of its own .Vast and diverse areas of agricultural land are still far from irrigation catchment. Breeding of improved seeds by modern aerobiological means is still under progress and very less is achieved compared to the desired target. Agricultural tools and machine production inside the country is still at nascent stage. Agricultural finance still falls under policy and implement question. The country relies heavily on neighboring countries for the supply of such inputs through formal and informal channels that would raise the question over food security and sovereignty as well. Therefore, to make efficient, reliable and sufficient provisions of agricultural input to the agriculture sector of Nepal is a crucial need of the day.

Key Words: Agricultural input, Crisis, finance

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### Background

Agriculture is the mainstay of Nepalese economy and around 66% of its population is engaged in it in various manifestations. The sector significantly contributes to the national GDP and comprises to one third share of its total volume. In addition it provides a broad scope for jobs, self employment and small scale agro enterprises. (https://www.fao.org/nepal/fao-in-nepal/nepal-at-a-glance, 2023).

Out of total land area of 14718000 ha only 21% of it summing at 3091000 ha of land is cultivated. (Statistical information on Nepalese agriculture 2076/77 (2019/20) GON). Still the agricultural and forestry sector is the backbone of the economy and it plays vital role for the livelihood of the people and the country itself relies heavily upon it for social and economic development as well. 60.4 percent of Nepal's population is engaged in agriculture and its contribution to the GDP of the country is estimated to be 25.8 % as per Nepal Rastra Bank's Economic Survey 2020-21. Merely 4 to 5 % of the total budget is allocated in the agriculture sector that is highly insufficient to meet the socio economic growth aspirations (*Nepal* Risk outlook bi annual report June 2022).

As per the target of 15<sup>th</sup> plan agriculture sector is targeted to be transformed as a competitive, climate resilient and export oriented industry (Yam Kanta Gaihre, soil scientist, The Kathmandu post, Monday, jan.2/2023 headed Nepal wants to be an agriculture-driven economy but future of the sector is in crisis). Agricultural policy 2004 still targets to discourage the non agricultural use of fertile agricultural land. (Keshav Acharya economist The Kathmandu post, Monday, jan.2/2023 headed Nepal wants to be an agriculture-driven economy but future of the sector is in crisis). Because of the soaring cost of the inputs it has become easier to buy and eat rather than to grow and eat (Yam Kanta Gaihre, soil scientist). In spite of the aggravating demand of agricultural products in the economy, the importance of agriculture is declining and the country has shifted to remittance driven economy from agricultural driven economy (Hem Raj Regmi, deputy director general, Kathmandu post, Monday, jan.2/2023 headed Nepal wants to be an agriculture of the sector is in crisis). In this concern, therefore, this research article aims to find out the exact causes and consequences of agricultural input crisis, with an idea to recommend appropriate framework to save the deteriorating situation. In this concern, this study answers the research questions as following:

- What is the current status of agricultural input procurement in Nepal?
- What is the extent of shortcoming (procurement gap as per volume and area)?
- What could be the effective mitigating measures to save the situation?

The purpose of the proposed study is to find out the current status and root causes of agricultural input crisis in Nepal with the following specific objectives.

- To find out the current status of agricultural input procurement in Nepal.
- To find out the extent of short coming (procurement gap as per volume and area).
- To find out the consequences of such crisis over the people engaged in agriculture.

Crisis of agricultural input is a serious problem and has not been given serious concern at policy level to mitigate it. Such a crisis is aggravating day by day and the peasantry of the country is shifting towards other means of livelihood inside the country and abroad. Such a situation if prolonged for a longer period of time food security will remain as a pertinent question. Nothing accountable has been found implemented as per establishment of chemical fertilizer and other input industries inside the country. As per study, research and observation nothing has been found being carried out yet in this line, therefore, it becomes the need of the day to find out the causes and consequences of agricultural input crisis. It becomes further to suggest policy measures to be adopted to save the vulnerable food crisis situation ahead. Following are the limitations of this study:

- Present study is based on secondary data from published and unpublished materials.
- Related fact and figures still under being processed under C.B.S. Nepal availability of current data is a problem in some of the cases.
- The study is confined to the country as a whole hence may not hold good for special pockets being privileged by govt. and non govt. organizations at micro level.

The research article has been organized into five separate headings each having a specific section of discussion. The various crisis heads are analyzed under irrigation catchment, procurement of chemical fertilizers (urea, potash and DAP), supply of improved seeds/ saplings, tools and machines and agricultural finance.

## **Review of literature**

In order to gather fair and precise knowledge about the agricultural input crisis in Nepal literatures on national, provincial and local level have been reviewed and studied.

Agricultural input means the provisions of needed material and services which are necessary to flourish agriculture and crisis means the frequent, sustained and chronic shortcoming of such provisions. Talking precisely Nepal suffers crisis in its irrigation catchment, procurement in chemical fertilizers (urea, DAP and potash), supply of improved seed and saplings, tools and machines and lastly very important one, the agricultural finance.

Chemical fertilizers (urea, potash and DAP) are most vital input for agricultural production. The demand for such fertilizers is aggravating day by day in spite of the fact that the country does not have any production unit of its own. Govt. of Nepal practiced deregulation policy over the supply of chemical fertilizers but the timely procurement of quality of fertilizer remained as a question. The govt. introduced and reintroduced subsidy regime in chemical fertilizers led positive impact over the supply but the given quota of subsidized fertilizer is many folds less than the actual need. (The journal of agriculture and environment, vol.11, p 126-137) 48% of total agricultural land of Nepal is irrigated, while 39% of it gets year around irrigation. If Nepal aims to achieve millennium sustainable goals such as SDG-1, SDG-2, and SDG-3 in order to observe inclusive growth, food security and climate resilience provision of adequate irrigation facility to existing agricultural land becomes must. Significant enhancement

in the production of wheat, maize and rice is found worldwide if rain fed agricultural land is provided adequate irrigation facility. (ELSEVIER Agriculture water management, June 2023, Vol. 283, 108287)

Agro biodiversity of Nepal is very rich and comprises 30,000 and over cropland races, which are mainly developed by local communities. Till now 623 varieties of crops have been registered to date; among them 3 were developed by participatory plant breeding, 10 by biotech assisted plant breeding and 610 through conventional plant breeding. 50% of local varieties of plant diversity have been lost because of the widespread use of modern and uniform verities. This fact reveals that procurement of modern breed of seeds has become crucial in the country as biotech assisted plant breeding is at very slow pace. (Journal of Agriculture and Forestry University (2020), Vol. 4review article concept and rationale of evolutionary plant breeding and its status in Nepal b. k. Joshi1\*, D. K. Ayer2, D. Gauchan3, and D. Jarvis National Gene Bank, NARC, Khumaltar, Kathmandu, Nepal)

Nepal enacts its agricultural development agenda to address the issue of labour scarcity, productivity, inclusive economic growth and sustainability through mechanization yet it remains among few places in south Asia, has yet to do significantly more to observe substantial mechanization rates. (ELSEVIAR agricultural system Volume 192, August 2021, 103200 Visualising adoption processes through a stepwise framework: A case study of mechanization on the Nepal Terai Brendan Brown <sup>a</sup>, Gokul P. Paudel <sup>a</sup>, Timothy J. Krupnik<sup>b</sup>)

For the economic growth of the country like Nepal modern agriculture is essential which is only possible by meeting the financial need of the farmers. Credit from the financial system becomes very important to the farmers to achieve the agricultural growth that leads the country towards economic growth. (Agricultural Financing and Economic Growth in Nepal R Khadka, 2018, elibrary.tucl.edu.np)

Agricultural input crisis has been the topic of discussion in Nepal from cabinet and among the general public. The problem has occupied the place of challenges in the recent millennium development goals. In this study, the researcher has tried to find out the causes of the agricultural input crisis and there consequence over food security. Quantifying the gap to measure the extent of crisis is the deficit between the past studies and the present research which is important for planners, policy makers and economists.

## Methodology

The study is both descriptive as well as analytical, which simply portrays an accurate profile of agricultural input crisis. Secondary data from different reliable sources are tabulated and descriptive analysis is done to answer the objective of the research. The input crisis found in agricultural sector of Nepal has been analyzed under various heads as per following.

### **Result and Discussion**

## **Crisis in Irrigation**

The crisis in irrigation and area under agriculture still to be covered is given here as under.

Land	Area
Agricultural land	18% of total land area-2,646,000 ha.
Irrigation potential land	12% of total land area-1,766,000 ha.
Irrigated area	9.3% of total land area-1,368,000 ha.
Irrigated land	77% of total irrigation potential land
Un irrigated land	23% of total irrigation potential land
Irrigated land	52% of total agricultural land
Un irrigated land	42% of total agricultural land

Source: Irrigation institutional reform-A future course in Nepal-ICID, 2017 Feb 16

Some 18% of the entire land area of Nepal is cultivated that sums to be 2,646,000 ha. Two third of the cultivated land (1,766,000 ha) is potentially irrigable. Some 42% of the cultivated area receives irrigation of different types but only 17% of the cultivated area has year-round irrigation. That is to say that only 41% of the total irrigated year receives year round irrigation. 82% of the total irrigated area (889,000 ha) is facilitated by surface irrigation in the terai region and the remaining 18% is irrigated through groundwater (Madhav belbase, Irrigation institutional reform-A future course in Nepal-ICID, 2017 Feb 16).

The terai lowland acquires most of the irrigated and fertile areas and the future potential irrigable land as well. Some 65% of agricultural land production is supported by existing irrigation system of the country at present. The command area under present irrigation system is around 90% in wet season and eventually it falls at 25% in dry season. Such variation in the command area is due to variation of water table of various streams in opposite seasons. Less than 8% that is 17,000 cubic meters of total irrigation potential has been estimated by the Agriculture Perspective Plan (APP)

## **Chemical Fertilizer Crisis**

Fertilizer supply has always been acutely low in Nepal, particularly due to its high dependency on both formal and informal imports to sustain its internal/domestic demand. According to the Ministry of Agriculture and Livestock Development (MOALD), Nepal's total demand for chemical fertilizer stands at <u>600,000 metric tons</u> (MT) (as of February 2022), wherein 25 percent is domestically produced and the rest 75 percent is imported from neighboring nations. Within the same figure, one-third of the total demand of chemical fertilizer is imported through normal channels and the rest via informal procedures such as illegal cross-border smuggling. There are two state owned companies namely Agriculture Inputs Corporation Limited (AICL) and the Salt Trading Corporation Limited (STCL) held responsible for importing and distributing chemical fertilizers at a subsidized rate(Shraddha ghimire center of social inclusion and federalism (CESIF) Fertilizer Crunch – a Perennial Issue

in Nepal March 9, 2022). Lackluster management practices, procurement discrepancy and corruption in such companies have paralyzed the farming sector. Moreover, the duo-monopoly exerted by them has profoundly restricted private companies from entering the fertilizers market. In addition, the existence of a cartel culture, presence of middlemen and heavy customs duty has also de motivated private companies and enterprises. All of this has left the fertilizer market unregulated with severe product crunch; ultimately hampering farmers – their produce and their productivity. Farmers always bear the burden of inadequate chemical fertilizers and plant nutrient supply during harvest/crop season.

Туре	2075/76(2018/19)	2076/77(2019/20)	2077/78(2020/21)
Urea	215,733	224,700	225,180
DAP	120,893	160,298	140,982
Potash	7,377	9,597	12,990
Total	344,004	394,595	379,152

#### Annual supply of chemical Fertilizer: in Metric Tones

Source: Agricultural statistics MOAD, 2022

The above table suggests that there is continuous short of supply of all three varieties of chemical fertilizers by 50% around by proportion than to the demand imparting deeper crisis in agricultural sector.

# **Crisis in Seed Supply**

Being provided high quality seeds alone, farmers can increase their output by 15 to 20 %. The major constraints that Nepalese farmers face are poor availability of improved seed characterized by low seed replacement rate of less than 10% (Tara Bahadur Ghimire,Nepal seed sector overview in the context of the nation seed vision 2013-35, status implementation gaps and the way forward). To increase good crop production availability of good quality seeds is must. Further the seed are required at appropriate time and at reasonable price as well.

The seed supply system within the country is not reliable and there are frequent complains among farmers about unavailability of quality seeds. The country is lagging behind in conserving diverse genetic resources. It has not been successful yet to utilize available resources in developing appropriate varieties for producing their seeds. Lot of efforts and resources are yet to be endowed to coordinate actors for smooth flow of seeds along the value chain. As a consequence we can see domination of imported seeds at a rising trend in Nepalese market without any quality and reasonable price question.

Because of the high potential productivity the demand of hybrid seeds is growing day by day. Such hybrid seeds of millions of worth are imported from abroad to full fill the demand. Further there is easier access for the entrepreneurs to procure pollinated seeds in the international market compared to that in domestic one. Reduction in import will not be possible unless the country does not start to develop suitable hybrid and pollinated varieties of different crops as per farmers' choice backed with reasonable price and timely availability.

Following table highlights the trend of seed production along with future target for the year 2025.

Seed type		Year			
	2010	2010 2019 2025 (targeted)			
Breeder	53.4	108	870		
Foundation	1502	4273	2978		
Improved	21209	28110	51,254		

Seed production in tones

Source: Nepal seed vision 2014-25

The table suggests that 54.8 point of the set target was achieved in the seed production in 2019. The maximum of 25% of the total farmers have been found of practicing seed replacement or using improved varieties of seeds and remaining 75% still practice conventional breed of seeds. Crisis in Agricultural Tools and Machineries

Lack of appropriate mechanization technologies remains as a major hurdle against conserve farming and practicing high value agriculture. Animal drawn implements are still under practice. There is yet much to be achieved in the mechanization of agriculture sector to transform existing pattern of tillage, intercultural operations, harvesting, post harvesting operations, transportation and processing.

Further it becomes impossible to make efficient use of modern equipments land holdings are fragmented in the tear region. In the hills the narrow terraces and steep topography creates huge divide in the use of machineries.

Limited access to institutional credit, insurance schemes, limited trained human resources, weak agro-machinery manufacturing enterprise, high fuel price and uncertain availability of rural energy resource are other issues pertaining as bottle neck to the use of modern tools and machines.

However the use of machines in the terai region and accessible hilly region is taking its pace but high cost of spare parts because of high import duty and value added being imposed, makes the repair maintenance cost of agricultural tools very expensive. The heavy duty on import (15% to 45%) on importing raw materials does not support local engineering firms to produce and sale machineries, tools and equipments locally. (Research gate; chapter January: 2017; Agricultural and rural mechanization in Nepal-status, issues and options for future)

Institution for research on extension and educational program of rural mechanization is very weak in Nepal. Agricultural engineering and farm machineries faculties under forest science universities and other agriculture related educational institutes are also not functioning in applied manner.

### **Crisis in Agricultural Finance**

Poor state of agricultural finance is the yet another reason for the poorer progress of Nepalese agriculture. Commercialization, Mechanization, competitiveness, import substitution and export promotion is not possible in agriculture unless optimum investment is endowed.

Banks and other financial institutions don't show their readiness to invest in agriculture in spite of govt. regulation. Government has directed banks and financial sector to consider but the institutions hesitate in doing so because of many hurdles as high operational costs, poor physical infrastructure. Some credit policies like credit ceiling, short grace period for

perennial crops, group based and collateral free loans are other setbacks to smoothen the flow of agricultural finance.(NRB: Priority sectors investment target, instructed by NRB Unified directive 2022).

Lengthy paper procedure, lack of agricultural insurance, subsistence farming, and need of high value collateral are the other pertaining issues of the agricultural finance of the country. Lack of awareness among farmers regarding subsidy loan, and other loan related facilities is another important issue.

Still 31.9% of Nepalese don't have bank accounts yet and majority of them are farmers. The use of financial technology is constrained at very low proportion of the total population. Internet banking, mobile banking and ATM users remain at merely 3.86%, 32.03% and 20.35% respectively. Network problem, language divide, poorer information technology knowledge are the major issues against rural population (A. Pandey. The Journal of Agriculture and Environment Vol: 23, June 2022 credit and financial access in Nepalese agriculture: prospects and challenges).

Priority	Institution	2020-21	2021-22	2022-23	2023-24
Agriculture	А	11%	13%	15%	-
Agriculture, SMEs, energy and tourism	В	16%	17%	19%	20%
Agriculture, SMEs, energy and tourism	С	11%	12%	14%	15%

Institution Wise Financial access to Agricultural Sector

Source: NRB

The above table suggests that NRB'S target to support agriculture, small and medium enterprises (SMEs), energy and tourism sector is enhancing year by year, yet it still remains to observe its implementation status on practical grounds.

Year-wise outstanding agricultural credit by different banks and financial institutions (million rupees)

Year	Bank(type A)	Bank(type B)	Bank(type C)	Credit %
2011	14191.6	2578.0	1508.8	2.6%
2012	23407.3	3689.2	1697.6	3.6
2013	31531.3	6338.7	1913.8	4.16
2014	40270.1	8697.6	1942.1	4.5
2015	50706.2	12422.9	2030.6	4.7
2016	61125.1	15580.3	2086.1	4.6
2017	75349.9	11607.1	3084.2	4.5
2018	116435.9	15538.8	3781.8	5.6
2019	166038.3	22564.4	4854.7	6.6
2020	201758.4	19281.5	4732.5	6.9
2021	-	-	-	7.6

Source: (MOF 2021, NRB 2021)

Under the directives of NRB all categories of banks namely A, B and C have been advancing there credit at increasing pace by percentage and as per volume as well .However set target of 13%, 17% and 12% respective could merely be met by2.6% in 2011 to that of 7.6 % in 2021. The disbursement of such agricultural credit needs to be increased by double fold so as to meet the expected outcome.

# **Causes of Crisis**

Following are the major causes found responsible for the crisis in agricultural inputs in Nepal.

- Continuous trend of under investment, poor supply of inputs, limited research and innovation poorer state of mechanization and service rendered to the farmers.
- Number of staffs and fund allocated in Extension services is very limited that arises question over its effectiveness. It remains at 1500 farmers per technician compared to that of 400 farmers per technician in developing countries.
- Major proportion of budget goes on salaries and administrative costs leaving very small proportion of it for programming.
- Absence of chemical fertilizer production unit within the country.
- Poor involvement of pvt. Sector enterprises in Agriculture input production front.
- Migration of agricultural labor force towards urban area and abroad for employment.
- High import duties on spare parts of agricultural machines creating problem on repair maintenance.
- Covid 19, Russia Ukraine war and political turmoil within the country.

# Consequences

Following are the major consequences observed because of the crisis in agricultural inputs in Nepal.

- Challenge of malnutrition because of hunger and food deprivation..
- It becomes difficult to adjust with newly emerging challenges like climate change, degradation in the quality of soil and the loss in biodiversity.
- Lack of modernization of agriculture it becomes difficult Satisfy consumers' changing tastes and expectations
- Lack of production and productivity make it difficult to meet the rising demand for more food of higher quality.
- Poor performance and frequent loss of the sector fails to attract desired level of invest in farming
- Lack of such inputs creates hurdle in adopting and learning newer technologies
- It makes the agrarian economy of the country to stay resilient against global economic factors related to agriculture.
- No inspiration to young generation to stay in rural areas and become future farmers, resulting to the massive migration towards urban area, India and abroad soaring to the higher level of dependency on multifarious fronts

### **Remedial Measures**

Following remedial measures are suggestion worth to save the agricultural sector passing through input crisis.

- Endowment of larger size of govt. budget to develop irrigation infrastructure and inter connection of the rivers of perennial nature
- Facilitating solar water irrigation system will allow farmers living in grid off areas to replace expensive diesel pump sets.
- Establishment of chemical fertilizer industry in suitable part of the country to maintain timely procurement of urea, potash and DAP
- To develop suitable hybrid and pollinated varieties of seeds of different crops as per farmers' choice and at dearer price and time.
- Research and innovation wing of NARC has to be activated on applied issues and agricultural extension services needs to be expanded in far and wide rural areas.
- Mechanization of agriculture should be enhanced by exempting heavy import duty on spare parts of machines and tools
- Agricultural loan and insurance policy must be revised and transformed to make it farmers' friendly in all its manifestation
- Special emphasis and priority should be given to enhance the technological literacy to make the farmers rational beneficiary of existing financial support whatever is available. Technologies must be farmer friendly as per language and gadget. Branchless banking system, insurance facilities, financial literacy campaigns, development of physical infrastructure should be practiced at greater pace to enhance agricultural credit.
- Priority and subsidy in agriculture so that the private agro- enterprises flourishes well within the country that substitute's agricultural import.

## Conclusion

As a mainstay of Nepalese economy, agriculture in Nepal is passing through various crisis of all kind of inputs. Farmers frequently fail to recover their investment that they endow in. Due to the lack of support of concerned authorities and institutions massive shift in agricultural manpower is observed towards urban sector, India and abroad. Villages are left with dependent population comprising women, children and elderly people. The deprived agricultural sector needs to be revived by every stakeholder by imparting their accountable and sincere efforts urgently.

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