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## Availability of micronutrients, PGRs, soil conditioners, enzymes, hormones, etc. in Kathmandu valley of Nepal

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### Abstract

A survey on availability of micronutrients, PGRs, Soil conditioners, Enzymes, Hormones, etc. in Kathmandu valley of Nepal was conducted during 2017 in Kathmandu, Lalitpur and Bhaktapur districts of Kathmandu valley in order to evaluate the products available in the market in different names and brands. The method of survey was mainly focused on collecting data by directly interviewing targeted groups i.e. agro-vets owner through the random selection. The study was carried out in Kalimati, Ratnapark and Macchapokhari of Kathmandu district; Lagankhel, Satdobato and Gwarkho of Lalitpur district and Kausaltar, Sanothimi and Gaththagar of Bhaktapur district. The survey sample size was 30 consisting 13 agro-vets from Kathmandu, 10 from Lalitpur and remaining 7 from Bhaktapur. Altogether there were 78 soil agrochemicals out of them 35 were micronutrients, 35 were PGRs / Enzymes / Hormones and 8 soil conditioners. Among them 7 micronutrients were registered, no single PGRs/Enzymes/Hormones were found registered and 2 soil conditioner were ready for registration at Ministry of Agricultural Development, Singhadurbar. Most of micronutrients were found with complex nature and mixed/complexed with primary macro nutrients (N, P and K) and secondary macro nutrients (Ca, Mg and S). Most of the PGRs/Enzymes/Hormones were found containing sea weed extract with various enzymatic acid, amino acid, humic acid, fulvic acid etc. Nepalese manufacturing companies were playing the important role in fulfilling the demand of nutrient based agro-chemicals. They were supplying the most of the agro-chemicals in Kathmandu valley than other countries. Maximum agro-chemicals reported during the survey had usable time period of about 3 years. According to respondents, the basis of agrochemicals selling was mostly found accord with the problems addressed by farmers to the agro-vets owner.

**Keywords:** Agro- chemical, micronutrients, PGRS, enzymes, hormones, boron, soil conditioners

### Introduction

Nepal is the country with the diverse physiography and agro-climatic condition which makes it suitable for cultivation of wide variation of crops and vegetables that are grown in different season and in different parts of the country. Among total population of Nepal about 65.7 % are dependent on agriculture for sustaining their livelihood (MoAD, 2015) [8]. Agriculture is the main source of income for them. The contribution of agriculture sector in the national gross domestic product (GDP) is 33.1 % (MoAD, 2015) [8] and it has been constantly declining. But the population of the Nepal is increasing by 2.3 % per annum and the agriculture productivity of Nepal is not sufficient for fulfilling the demand of food crops. This situation has led us to adopt the different high yielding crop varieties combined with high density cropping and use of different chemical supplements like yield booster, growth stimulator, chemical fertilizer etc. to increase productivity. So, the increase in cultivation intensity with the increasing demand for higher yield with better quality has resulted in increasing demand of micronutrients, plant growth regulators (PGR), soil conditioners, enzymes and hormones.

Micronutrient deficiencies in Nepalese soil has been reported by many scientist from different areas. Boron deficiency was found to be wide spread in different ecological region of Nepal. Wheat sterility in western Nepal was reported to be caused by the deficiency of Boron (Subedi *et al.* 1995) [14]. Likewise, problems of flower dropping seen in Chitwan districts which is in inner Terai of Nepal decreased significantly after following the application of 0.5 kg/ha Boron and similar results were also reported for lentil (Shrivastav *et al.* 2000) [13]. The level of Boron in soil is related to the organic carbon and clay content, including oxides of aluminum and iron in soil (Goldberg *et al.* 2002) [2] and also related to the temperature and availability of moisture (Mishra *et al.*, 1992, Pandey, 1995) [9, 10]. And since, the Nepalese soils are light in texture i.e. low clay content and low in organic carbon (Joshi and Karki, 1993) [3], Boron content is generally low in Nepal (Sillanpaa, 1990, Sipola and Lindset, 1994) [11, 12]. Soils in Baglung,

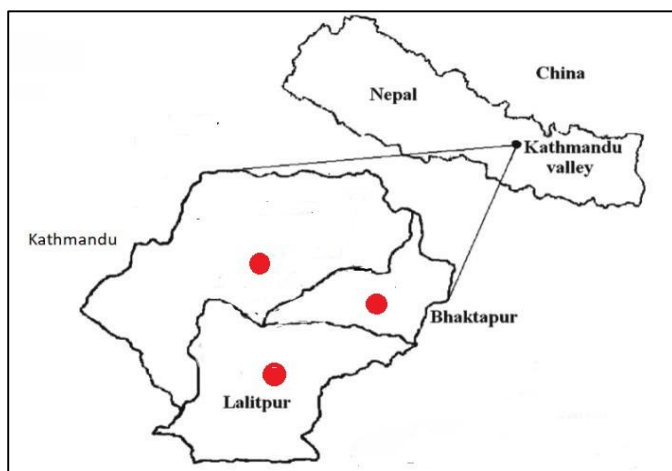
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Parbat, Tanahun, and Syangja in the Middle mountain region were reported to be very low contents of Boron (Acharya *et al.* 1998) <sup>[1]</sup>. The content of microelements such as Cu, Zn, Mn, and Mo are medium to low in Nepalese soils, whereas Fe content is high (Karki *et al.*, 2004) <sup>[6]</sup>. Tripathi *et al.* (1998) <sup>[15]</sup> reported the results of a survey of mandarin leaves in western Nepal where it was found that Zn and B contents in the leaves of the mandarin were below sufficiency level. Tuladhar (2001) <sup>[16]</sup> analyzed the micronutrients in Chitwan soils and reported that most of the samples were low to medium in Zn. There is only limited information available on the status of copper in Nepalese soil but deficiency of copper is normally not observed and mostly found to be medium (Karki *et al.*, 2004) <sup>[6]</sup>. In the light soils of Chitwan (Inner Terai), Mn content was found to be low (Khatri-Chhetri and Schulte, 1985) <sup>[7]</sup>. The soil of the Chitwan, Nawalparasi, Palpa, Jhapa and Bardiya are found to be containing high level of Manganese. (Karki *et al.*, 2004) <sup>[6]</sup>. Mostly the Nepalese soils are acidic, thus it limits the molybdenum available to plant, and causes low molybdenum content (Sippola and Lindstedt, 1994, Karki, 1995) <sup>[12]</sup>. Districts like Palpa, Nawalparasi, and Bardiya have high levels of Mo in the soils, as soils in these Terai regions are not as acidic as those in the hill regions (Karki *et al.*, 2005) <sup>[15]</sup>. Under certain limited conditions, the application of ammonium molybdate at 2 kg/ ha could provide sufficient Mo as residue, even after harvesting a third crop (Karki, 1995) <sup>[4]</sup>.

Continuous depletion of micronutrients in soil compelled farmers to use micronutrients and other soil agrochemicals. Use of soil amendment and plant nutrients has been increased in agriculture sector as these helps farmers to increase their productivity to the maximum level. Therefore, many importers and local companies have come up in the market with diverse products. Farmers do not have knowledge on what to use and what not. So it is necessary to classify what types of products are being flooded in the market. This research was conducted to evaluate different products available in Kathmandu valley market in varying names and brands.

### Materials and Methods

The study was carried out in Kathmandu valley which includes Kathmandu, Lalitpur and Bhaktapur districts respectively as shown in figure 1.



**Fig 1:** Map of Nepal showing surveyed area

The questionnaire survey was conducted in different appropriate areas of 3 different districts that meets the

purpose of the study. In Kathmandu district survey was conducted in Kalimati, Ratnapark, and Macchapokhari area. Likewise, the questionnaire survey was conducted in Khumaltar/Satdobato, Lagankhel and Gwarko area of Lalitpur district. And for the Bhaktapur district Sanothimi, Kaushaltar and Gathghar area was selected. The questionnaire survey was conducted in the year 2017.

Sampling was carried out by using random sampling method. A total of 30 agro-vets were randomly selected for this study. Among total 30 agro-vets 13 were surveyed from Kathmandu, 10 were surveyed from Lalitpur and remaining 7 from Bhaktapur. Both primary and secondary data were collected from field and various reliable sources and were analyzed during the study period.

## Results and Discussion

### Availability of micro-nutrients in Kathmandu Valley

During the survey the total micronutrients available in the Kathmandu valley was found to 35 and among the total 35 micronutrients maximum of them (27) were found with the complex composition of micronutrients and macronutrients like Zinc, Boron, Iron, Copper, Manganese, Molybdenum, Magnesium, Nitrogen, Phosphorous, Potassium etc. Micronutrients with the trade name Agri zinc plus, Agriliv, Agri-manganese, Agromia, Agromix, Agromix plus, Agromix Plus NPK, Agroplex L, Agroplex molyboron, All micro, Boro-M, Colbomin, Mammoth, Mammoth zinc, Fertimin VF, Gold-Zinc, Jagromin 99, Ki-plea, Multiplex General liquid, Plant gold, Phytoplex, Phyto Borocol, Plant Juice Multi-mineral, Pro-zinc Gold, Vegimax, Zao Man Yuan, Zeeplex Gold are found with complex composition. Likewise, remaining 8 micronutrients with the trade name Bijaya Gold, Boro-max power, Boron Gold, Borosol-20, Chelazin, K-zinc, Urja Agro Boron, Urja Agro Zinc are found with the straight composition and Boron was the mostly found micronutrients in with straight composition. Out of total 35 micronutrient found, only 7 micronutrients were registered by Government of Nepal and rest were not registered.

### Availability of PGR/ enzymes/hormones in Kathmandu Valley

PGRs/Enzymes/Hormones with the trade name Aabishkaryze, Agrinol plus, Agrizyme, Agroplex king star, Altret-TM, Amica, Amino plus, Bio-energy, Biostar Plus, Bio-stimulator, Bloom Samridhi Plus, Brassino, Calbomin, Everest flower, Evergreen organic stimulator, Faster, Faster Gold, Flora, Florigold, HB-101, Humic Gold, Humicell-G, Juju, Magic plus Max power, Niraculam, Phyto Gold Gr., Poshan, Poshan Plus, Puma 555, Samridhi Gold, Sarbottam Shakti, S-Biozyme, Tejasbi, Win Chi win were found. Total number of PGRs/Enzymes/Hormones found during the survey was 35 and among the 35 PGRs/Enzymes/Hormones, maximum number of them were found consisting sea weed extract followed by the amino acid and humic acid in their composition. The registration status of the following PGRs/Enzymes/ Hormones were not found in the Ministry of Agricultural Development, Singa durbar.

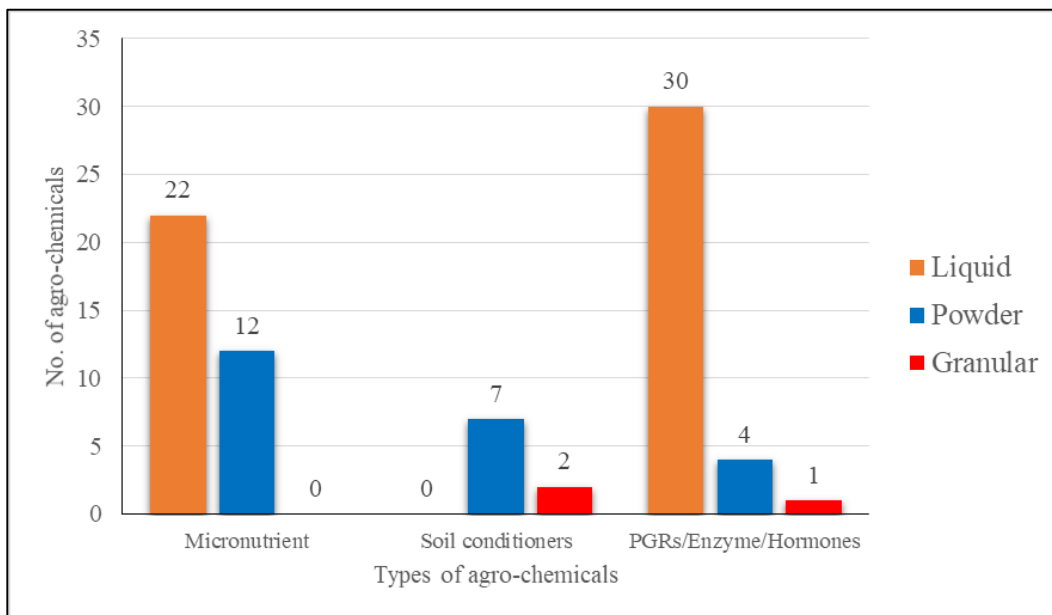
### Availability of soil conditioners in Kathmandu Valley

Among the agro-chemicals found during survey soil conditioner were least found agro-chemicals. Total number of soil conditioner found in Kathmandu valley was 8 among which 2 (oil cake and vermi-compost) were locally prepared and 6 were synthetic soil conditioner with the trade name Agri lime, Sathi krishi mal, Unnat krishi chun, All purpose, Max

power 0.21%, GMT powder 17% and plant gold. Maximum number of synthetic soil conditioner were found composed of some trace elements, organic matter and organic carbon with secondary elements, organic matter and organic carbon with secondary macronutrients (Ca, Mg, and S). In case of soil conditioner, out of total 8 soil conditioner 2 were ready for

registration and remaining were found not registered by Ministry of Agricultural Development.

**Available forms of different soil-chemicals**



**Fig 2:** Forms of various soil-chemicals in Kathmandu Valley

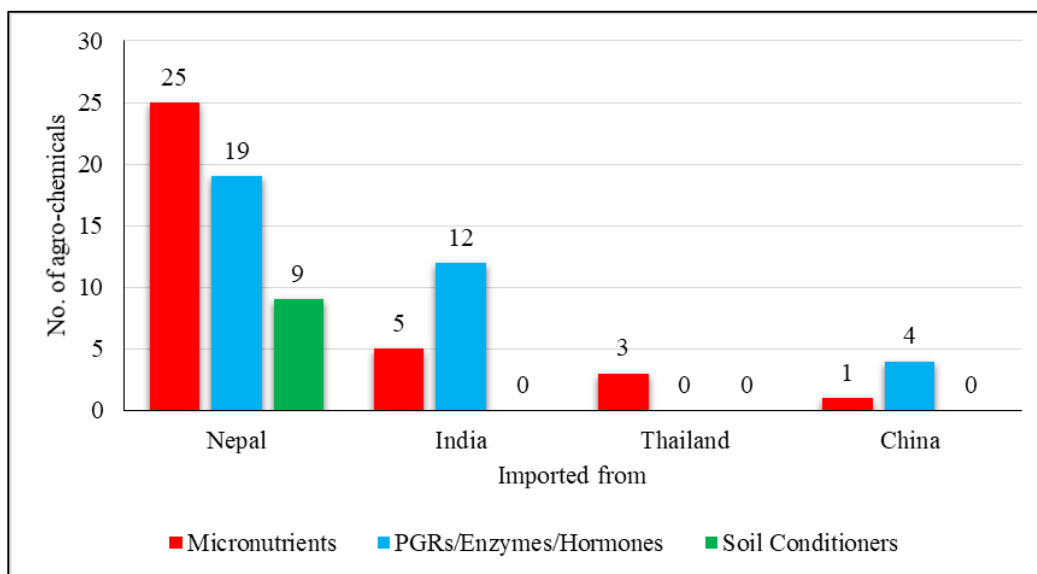
Maximum number of agro-chemicals were found in liquid form and least number of agrochemicals were found in granular form. Among total 34 micronutrients found in the survey 22 were found in liquid form and 12 micronutrients were found in powder form. Micronutrients with granular form were not found.

Likewise, among the 9 soil conditioner found, 7 were in powder form and 2 were in granular form. Similarly among the total 35 PGRs/Enzymes/hormones 30 were in liquid form, 4 were in powder form and 1 in granular form.

Maximum number (7) of soil conditioners were found in powder form and remaining 2 soil conditioners were found in granular form.

This results shows that the maximum number of agro-chemicals were found in liquid form and the reason behind it may be to improve the application effectiveness, safety and handling.

**Availability of soil-chemicals based on their import**



**Fig 3:** Soil-chemicals distribution based on importing countries

Among the total 35 micronutrients found, maximum number of micronutrients (26) were found manufactured in Nepal, 5 micronutrients were found imported from India and the number of micronutrients imported from Thailand and China were be 3 and 1 respectively.

In case of PGRs/Enzymes/Hormones also maximum number (19) were found manufactured in Nepal whereas 12 PGRs/Enzymes/Hormones were found imported from India. And the number of PGRs/Enzymes/hormones imported from China was found 4 and no micronutrients were imported from

Thailand. And the soil conditioners was only observed to be produced in Nepal.

This result shows that maximum number of micronutrients, PGRs/enzymes/hormones and soil conditioners were produced in Nepal followed by in India, China and Thailand respectively. This will aid farmer to get the agro-chemical with best quality in lower price.

#### Soil-chemicals availability from manufacturing companies of Nepal

Among the nutrient agro- chemical manufacturing companies in Nepal, Golden Agro chemicals Pvt. Ltd., of Chitwan was found to producing maximum number of agro-chemical with 6 micronutrients and 4 PGRs/Enzymes/Hormones. The Agri-care Nepal Pvt. Ltd., Chitwan was found to be producing 5 micronutrients and 4 PGRs/Enzymes/Hormones. Similarly Urja Agro Pvt. Ltd., Bhaktapur and Phyto-care International

Pvt. Ltd., Chitwan were found producing 4 micronutrients and 2 PGRs/Enzymes/Hormones each. Among the companies manufacturing the soil conditioner, G.M.T Krishi Samaghri Udhog, Chitwan found to be producing 2 soil conditioners and the Nepal Biotech Pvt. Ltd., Kathmandu is producing 2 soil conditioners.

Likewise there are also other agro-chemicals manufacturing companies like Nepal Agro-chemicals Pvt. Ltd., Bara, Nepal Agro- Industries Pvt. Ltd., Bara, Dallakoti Crop Science Pvt. Ltd., Bara, Nepal Krishi Rasayan Pvt. Ltd., Bara and Kishan Agro- Chemicals, Parsa who have been producing the agro-chemicals in Nepal. This results indicates that the maximum number of soil-chemicals found in Kathmandu valley market was manufactured with in Nepal and also shows that the maximum number of companies manufacturing agro-chemicals are located at the Bara and Chitwan districts of Nepal.

**Table 1:** Soil-chemicals and their manufacturing companies

S.N.	Types of agro-chemicals			Manufacturing Company
	Micro-nutrients	PGRs/Enzym-es/Hormones	Soil Conditioners	
1	1	2		Nepal Agro-Chemicals Pvt. Ltd., Bara
2	1	1		Nepal Agro-Industries Pvt. Ltd., Bara
3	1	3		Dallakoti Crop Science Pvt. Ltd., Bara
4	6	4		Golden Agro Chemicals Pvt. Ltd., Chitwan
5	5	4		Agri-Care Nepal Pvt. Ltd., Chitwan
6	2	1		Nepal Krishi Rasayan Pvt. Ltd., Bara
7	4	2		Urja Agro Pvt. Ltd., Bhaktapur
8	4	2		Phyto-Care International Pvt. Ltd., Chitwan
9	1			Kishan Agro-Chemicals, Parsa
10	1		2	G.M.T. Krishi Samaghri Udhog
11			2	Nepal Biotech Pvt. Ltd., Kathmandu
12			3	Homemade

#### Availability based on usable period of soil-chemicals

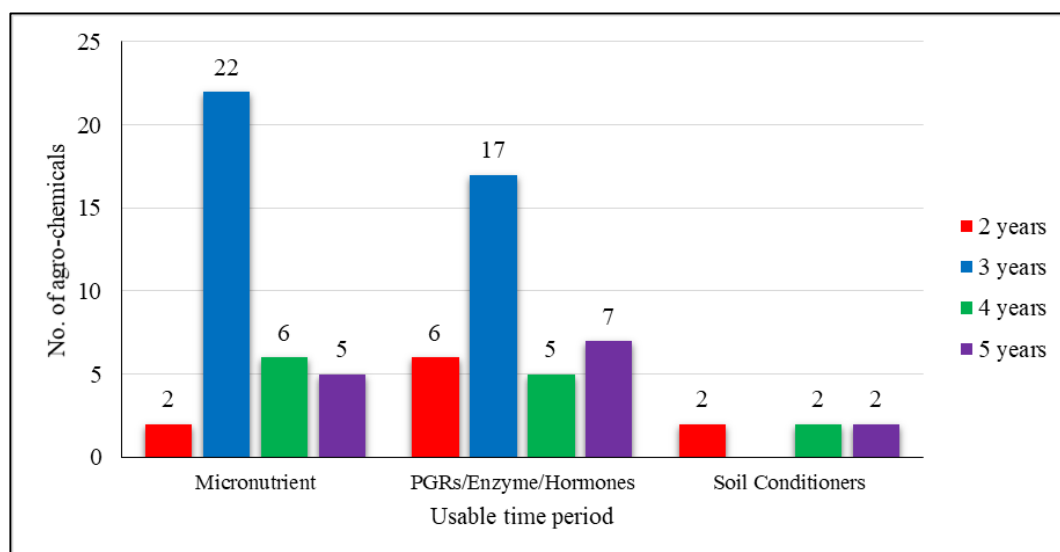
In terms of usable period of micronutrients, maximum micronutrients (22) were found with expiry duration of 3 years and 6 micronutrients with the expiry duration of 4 years, 5 micronutrients were found with the expiry duration of 5 years and remaining 2 micronutrients were found having the expiry duration of 2 years.

Similarly for the PGRs/Enzymes/Hormones the maximum number (17) of them were found having the expiry duration of 3 years. 7 PGRs/Enzymes/Hormones were found with the

expiry duration of 5 years. And the number of PGRs/Enzymes/Hormones with the expiry duration of 2 and 4 years were found to be 6 and 5 respectively.

For soil conditioner maximum number (2) were found with the usable period of 5 years and soil conditioners with the use time period of 2 years and 4 years found to be 2 for each.

This results indicates that the maximum soil-chemicals have expiration intervals of 3 years followed by 5 and 4 years which aids farmers to use the soil-chemicals for longer time period if placed in right place and condition.



**Fig 4:** Usable period of different soil-chemicals

### Basis of soil-chemicals distribution

In Kathmandu valley, different agro-vets gave mixed responses when they were asked the basis of agro-chemicals selling to the consumers/farmers. Three different questions / basis (like farmer's own choice, problems addressed and technician's recommendation) were asked and most of the agro-vets (17) responded that most farmers take soil-chemicals by addressing their farm problems at the agro-vets while some farmers take in accord with technician's

recommendations. Eight agro-vets responded that they suggest farmers to take soil-chemicals. While 3 agro-vets had responded that farmers use to come through technician's recommendation to buy soil-chemicals. But, there were 2 agro-vets who had received few farmers buying agro-chemicals on their own choice, maximum number of farmers by problem addressing and some farmers with technician's recommendation. The mixed responses of 30 respondents of Kathmandu Valley is represented in the table below.

**Table 2:** Reason of agro-chemicals selling to farmers

S.N.	Number of agro-vets	Reason of agro-chemical distribution		
		Farmer's own choice	Addressing problems in agro-vet	Technician's recommendation
1.	17	-	√√	√
2.	8	-	√	-
3.	3	-	-	√
4.	2	√	√√√	√√

(More "√" marks represents more number of farmer's responses)

### Conclusion

A total of 35 micronutrients were found among which 27 were found with complex composition and 8 with straight composition. And the maximum number of micronutrients found were with the composition of Boron, Copper, Iron, Manganese, Molybdenum, primary macronutrients (N, P, K) and secondary macronutrients (Ca, Mg, S). Boron was the mostly found micronutrients with straight composition. Total number of PGRs/Enzymes/Hormones found during survey was 35. Maximum number of PGRs/Enzymes/Hormones were found consisting Sea weed extract in their composition followed by amino acid and humic acid. Total 8 soil conditioners were found which include 2 natural soil conditioner i.e. oil cake and vermi-compost and remaining synthetic soil conditioner. Most of the synthetic soil conditioner consists some trace elements, organic matter and organic carbon with secondary macronutrients (Ca, Mg, and S). From the survey it was found that most of the agro-chemicals were found in liquid form followed by powder and granular. Among the total micronutrients 22 were found in liquid form and 13 in powder and no micronutrients were found in granular form. Likewise, 30 PGRs / Enzymes / Hormones found in Liquid form, 4 in powder form and remaining 1 in granular form. In case of soil conditioner 6 were found in powder form and 2 in granular form. No soil conditioner were found in liquid form. On the basis of import maximum number (43) of agro-chemicals (micronutrients, PGRs/Enzymes/Hormones, soil conditioner) were found manufactured within Nepal followed by India (17), China (5) and Thailand (3). Agro-chemical manufactured by companies like Golden Agro-chemicals Pvt. Ltd. and Agri-Care Nepal Pvt. Ltd were found maximum in Kathmandu valley. From the survey it was found that expiration interval of maximum agro-chemicals was 3 years followed by 5 and 4 years. It was also found that most farmers take their agro-chemicals by addressing their farm problems at the agro-vets and also according to agro-vets suggestion while some farmers take in accord with technician's recommendations.

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## Annexes

### 1. Trade names and compositions of various micro-nutrients available in Kathmandu Valley

S.N.	Trade Name	Composition	Registration Status
1	Agri zinc plus	Zn-8%,B-1%,Fe-1%,Cu-1%,Mn-0.5%,Mo-0.03%,Mg-1%,S-10%	Registered
2	AgriLiv	Zn-5.0%, B-0.5%, Cu-0.5%, Mn-0.2%, Fe0.5%, Mo-0.02%, N, K	Registered
3	Agri-Manganese	Mn-9.6%,S-12%	Registered
4	Agromia	Zn-1%,B-2%,Mo-0.20%,Ca-5%,Fe-2%,Mg-2%,K-3%,chelating agent-100%	Not registered
5	Agromix	Zn, Cu, Mo, Fe, B, Mn, Mg	Not registered
6	Agromix Plus	Zn-6.0%,Cu-0.5%,Fe-1%,Mn-0.5%,B-1%,Mn-0.5%,B-1%,Mo-0.03%,N-3.5%,P-1.5%,k-1.5%	Not registered
7	Agromix Plus NPK	Zn-6%, Cu-0.5%, Fe-1%, B-1%, Mn-0.5%, Mo-0.5%,N-3.5%,P-1.5%,K-1.5%	Not registered
8	Agroplex Molyboron	B-20% (min) w/w with Mo, Mn	Not registered
9	Agroplex-L	Zn-5%,Mg-4%,Fe-0.50%,B-0.50%,Cu-0.50%,Mo-0.20%,Mn-0.50% and NPK	Not registered
10	All Micro	Zn-5.0%,Mo-0.02%,Cu-0.50%,Fe-0.60%,B-0.50%,Mn-0.20% with chelating agent	Not registered
11	Bijaya Gold (Mono zinc)	Zn-33%	Not registered
12	Boro-M	B-12%, Mo-0.05%, N-4.0%	Registered
13	Boro-Max Power	B-20%	Not registered
14	Boron-Gold	B-20% (min)	Not registered
15	Borosol-20	B-20%	Not registered
16	Chelazin	Chelated Zn EDTA-12%	Registered
17	Colbomin	B-10.5%,Ca-4.5%	Not registered
18	Fertimin VF	Zn-6.0%,B-1.5%,Mg-0.5%,Cu-0.25%,Mn-1.60%,Mo-0.02%,N-2.0%,K-2.0%	Not registered
19	Gold-Zinc	Zn-8%,Mg-1.0%,Cu-0.5%,Fe-1% with B, Mn, K, Ca	Not registered
20	Jagromin 99	Fe-0.5%,Zn-3%,Mn-0.2%,B-0.5%,Cu-0.5%,Mo-0.2%,mg,S,N,Na and water	Not registered
21	Ki-plea	N, P, K, Ca, Mg, Zn, Cu, Fe, B, Mg, Mn	Not registered
22	K-Zinc	Zn-20%	Not registered
23	Mammoth	B-1%,Ca-9.85%	Registered
24	Mammoth Zinc	Zn-5%, S-2%	Not registered
25	Multiplex General Liquid	Zn-5%,Mo-0.2%,B-0.5%,Fe-0.5%,Mn-0.2%,Cu-0.5%	Not registered
26	Plant gold	Zn-2.19%, Fe-0.11%, Cu-0.05%, Cu-0.41µg/g, Mg-0.71%, Organic matter-8.80%, Organic Carbon-5.11%, Mn<0.01%, Ca-0.75%	Registered
27	Phyto Borocal	B-10.50%, Ca-4.5%	Not registered
28	Phytoplex	Fe, Mn, Zn, Cu, Mo, B	Registered
29	Plant Juice Multi mineral	Total OM-6.0% w/w, Total Nitrogen-0.7% w/w, Organic Nitrogen-0.7%,Free Amino acid-12.0%,Mn-1%,Zn-4.0% w/s,Cu-0.25 w/s, B-0.03%, S-9.0%	Not registered
30	Pro-zinc Gold	Zn-150 gm/lit, N-10 gm/lit, OM-20gm/lit	Not registered
31	Urja Agro Boron	B-10.5%	Not registered
32	Urja Agro Zinc	Zn-21%	Not registered
33	Vegimax	Trace minerals vitamins and plant products	Not registered
34	Zao Man Yuan	Fe, Mn, Zn, B	Not registered
35	Zeeplex Gold	Zn-6.0%,Fe-0.5%,Mn-0.25%, Citric Acid-0.20%, B-0.60%, Cu-0.75%, Mo-0.03%, plant growth minerals-50 ppm	Not registered

### 2. Trade names and compositions of various PGRs/enzymes/hormones

S.N.	Trade Name	Composition	Registration Status
1	Aabishkar-zyme	Sea weed extract, Ascophyllum nodosum, carbohydrate, Animdaryin Inorganic salt	Not Registered
2	Agriinol plus	Triocontonol A.I.-0.05% (w/w),Amino acid-3%,Emulsifier-5.0%9(w/w)	Not Registered
3	Agrizyme	Sea weed extract, Auxin, Cytokinin, chelated micronutrient with hydrolyzed protein	Not Registered
4	Agroplex king star	N-liquefied 25% w/w	Not Registered
5	Altret-TM	Amino acid-5%,Sea weed extract-5%,Vitamin-1%, Biofluvic acid-5%, PGR-0.1%, Preservatives and Emulsifier-15%	Not Registered
6	Amica	Amino acid with calcium	Not Registered
7	Amino plus	Amino acid, Metallo chelates, Hydrolysed protein, Phytostimulates	Not Registered
8	Bio-energy	Sea weed extract, Bio extract	Not Registered
9	Biostar Plus	Blend of plant growth stimulant and inherent elements of plant origin	Not Registered
10	Bio-stimulator	Humic Acid-50%, Amino acid-10%, Sea weed extract-10%, S-10%	Not Registered
11	Bloom Samriddhi Plus	Nitrobenzene-35%, Emulsifier, preservatives and solvent-65%	Not Registered
12	Brassino	Humic acid-20%,Fluvic acid-10%,Amino acid -10%,Amino acid-10%, Sea weed extract-10%,Gubelic acid-0.05%	Not Registered



13	Calbomin	Seaweed extract, amino acid complex, B, Ca, K	Not Registered
14	Everest flower	Nitrobenzene-21%	Not Registered
15	Evergreen organic stimulator	Humic acid-3.55 w/w, Amino acid, Fluvic acid	Not Registered
16	Faster	Seaweed extract, Amino acid, HA, FA, etc.	Not Registered
17	Faster Gold	Sea weed extract, Amino acid, Humic acid, Fluvic acid, Zinc chelated Fe, K	Not Registered
18	Flora	Trioctanol-0.1%	Not Registered
19	Florigold	Flowering stimulant	Not Registered
20	HB-101	Plant vitamins	Not Registered
21	Humic Gold	Humic acid-18%,Fluvic acid-5.4%,Carrier-100%	Not Registered
22	Humicell-G	Humic acid granules	Not Registered
23	Juju	Gibelic acid-0.001%,Protein hydrolyase-2.50%,Sea weed extract-3 i.p,Fe-2.2%,Mn-1.4%,mg-4.3%,Zn-3.9%, Emulsifier-1%	Not Registered
24	Magic plus	Sea weed extract, organic compound, protein hydrolysate	Not Registered
25	Max power	Nitrobenzene-20% w/w,sulfactant-40% w/w, filter/carrier-40%	Not Registered
26	Niraculam	Trioctanol-0.05% EC	Not Registered
27	Phyto Gold Gr.	PSB-25%,Sea weed extract-18%,humic acid-25%,Amino acid-10%,Organic supplements-10%,Vitamin-2%,Ascorbic acid-10%	Not Registered
28	Poshan	Amino Acid, Auxin, Cytokinin, SeaWeed Extract, TE	Not Registered
29	Poshan Plus	Humic acid-6%(min), Zn, Fe, P, Mn and plant hormones	Not Registered
30	Puma 555	Amino acid, Cytokinin, Humic acid	Not Registered
31	Samridhhi Gold	Nitrobenzene-17%,Humic acid -10%,Amino acid-3%,Emulsifier,preservatives and solvent	Not Registered
32	Sarbottam shakti	-	Not Registered
33	S-Biozyme	Ascophyllum nudoaum-21% w/w, Amino acid-17% w/w, Humic acid -8% w/w	Not Registered
34	Tejasbi	Sea weed extract-15%, Amino acid-2%, Alginate acid-8%, bentonite granules-100% (NPK and trace nutrients)	Not Registered
35	Win Chi win	NPK, Amino acid, Fluvic acid,Vit-B <sub>11</sub> ,B <sub>12</sub> ,B <sub>6</sub> ,Nitric acid	Not Registered

### 3. Trade names and composition of soil conditioners

S.N.	Trade Name	Composition	Registration Status
1	Agri lime	caco <sub>3</sub>	Not Registered
2	Sathi krishi mal	N-7.4%,K <sub>2</sub> O-1.57%,P <sub>2</sub> O <sub>5</sub> -1.96%, Organic carbon-1.72%,C.N. Ratio-12:4:1,CaO-1.75%,MgO-2.75%,Na <sub>2</sub> O-2.25, Fe <sub>2</sub> O <sub>3</sub> -16.18,	Not registered
3	Oil cake	oil seeds	-
4	Vermicompost	-	-
5	Unnat krishi chun	Hydrated caco <sub>3</sub>	Not registered
6	All purpose	Trichoderma and other essential microbes	Not registered
7	Max power 0.21%	Ca-17.35%, Mn-1.81%, Fe-0.47%, Zn-0.21%, S- 0.004%, 0.60%, K <sub>2</sub> O-0.60%, Organic carbon-1.15%, Boron-0.008%	Ready for registration
8	GMT powder 17%	Ca-19.25%, Mn-1.72%, Mg-0.43%, Cu-4.1µg/g, Organic carbon-0.73%, Organic matter-1.25%, Zn-0.50%, B-<0.01%, Fe-0.84%	Ready for registration