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Himalayan College of Agricultural Sciences and Technology
(HICAST)
Purbanchal University affiliate
Kirtipur-3, Kathmandu

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FOREWORD

Himalayan College of Agricultural Sciences and Technology (HICAST) has been conducting academic programmes in affiliation with Purbanchal University since 2000. It has been conducting various bachelor's programmes in agriculture, veterinary science, and master's programmes in meat / dairy technology and agri-business. During the last 26 years the institution has produced around 2000 students for the nation. This number itself is not huge but for a small institution run by private sector it's not a small also if we consider the contribution made for agricultural transformation in a small country like Nepal. Students of all academic programmes must conduct thesis research under the supervision of faculties at HICAST. Without being timely published, these thesis cannot reach to a wider readership including the growers and entrepreneurs, and continue to remain as decorative materials in the bookshelves of the library. Realizing the importance of widely sharing at least the abstracts of those researches, an attempt has been initiated by us to publish the HICAST thesis research abstracts annually. This is the 15th volume of the journal. This volume of HICAST Research Abstract consists of 81 original research abstracts. A total of 81 graduate students had conducted the researches on various subjects at various parts of Nepal. This publication will be useful for the students, researchers, teachers, policymakers, and development workers. I would like to acknowledge all the faculty and scientists who supervised HICAST students to conduct these researches.



Binayak Prasad Rajbhandari, Ph.D.
Executive Chairperson, HICAST
Editor-in-Chief: NepJAS and HICAST Research Abstracts

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AGRICULTURAL SCIENCES

FARMERS' PERCEPTIONS OF CLIMATE SMART ADAPTATION AND DISEASE MANAGEMENT IN POTATO CULTIVATION AT KAVREPALANCHOK DISTRICT

Bikash Parajuli and Subeksha Shrestha

Climate change is a global phenomenon, and Nepal, being an agriculture-dependent country, is highly vulnerable to its impacts. Potato (Solanum tuberosum L.) is an important cash crop in Kavrepalanchok District, recognized as one of the leading potato-producing areas, and has experienced a decline in productivity in recent years due to changing climatic conditions. Potatoes are highly sensitive to temperature fluctuations and irregular rainfall, which adversely affect crop growth, yield, and disease incidence. To address these challenges, a study entitled "Farmers" Perception of Climate-Smart Adaptation and Disease Management in Potato Farming" was conducted in Kavrepalanchok District from March to May 2026. A total of 100 potato-growing farmers from Banepa, Panauti, Panchkhal, and Mandan Deupur municipalities were selected using simple random sampling, and data were analyzed using Microsoft Excel. The study revealed that 94% of respondents were aware of climate change and its impacts on agriculture. Most farmers reported irregular rainfall (93%) and prolonged drought (86%), which were perceived to increase pest and disease incidence (80%) and weed infestation (76%), while reducing potato yield (74%) and affecting harvesting time (69%). Late blight (27%) and insect pest infestation (26%) were identified as the major production constraints. To cope with these challenges, farmers adopted climate-smart practices, particularly plastic mulching (87%), followed by organic manure application (82%), adjustment of planting dates (73%), improved varieties (68%), and crop rotation (62%). For disease management, biological pesticides (92%), plastic mulching (77%). and crop rotation (62%) were commonly used. However, adoption was constrained by climate variability (80%), high

input costs (78%), lack of technical knowledge (72%), and limited credit access (65%). The study concludes that climate-smart practices are essential for enhancing resilience and ensuring sustainable potato production in the district.

Keywords: Climate change, adaptation strategies, , potato productivity, sustainable agriculture

ASSESSMENT OF MAJOR EXTERNAL CAUSES OF YIELD DECLINE IN APPLE (Malus domestica) AND THEIR MANAGEMENT PRACTICES IN JUMLA DISTRICT.

Tanka Pd. Chaulagain and Shanta Man Shakya

A survey was conducted in four rural municipalities of Jumla: Chandanath Municipality. Tatopani, Tila, and Patarasi Rural Municipalities, with an objective of documenting the current status and productivity, identifying the major causes and exploring the practices to reduce yield decline in apple (Malus domestica). The survey was carried out among 110 apple growers selected using random sampling from a total selected municipal population of 1152 farmers registered under Apple Super-zone. A pretested, semi-structured questionnaire was used to gather data from respondents. Data analysis was done by using MS Excel. The findings revealed that yield decline is widespread problem, with 44% of orchards experiencing moderate (20-40%) unfruitfulness and 33 % facing high to severe conditions (40%). The major contributing factors identified were lack of pollinizer varieties (4.2 mean score), poor irrigation facilities (3.2 mean score), and pest and disease infestation (3.7 mean score). Pollination-related factors showed strong positive correlation with fruit bearing (r=0.68 for pollinizer and r = 0.62 for beehives), indicating their critical role in productivity. Economic analysis showed a favorable benefit-cost ratio of 1.9. indicating profitability despite production constraints. Farmers adopting improved practices such as pruning exhibited only 20% unfruitfulness, nutrient management exhibited 25% and pollinizer use exhibited significantly

lower (15%) unfruitfulness levels. The study concludes that yield decline in apple is primarily driven by poor pollination management, inadequate orchard practices, and climatic stresses. Inclusion of pollinizer varieties and bee keeping, proper adoption of orchard management practices and awareness program can enhance productivity and sustainability of apple crop in the study area and similar places.

Keywords: B/C ratio, beekeeping, Jumla, pollination, pollinizer varieties, unfruitfulness

EFFECT OF POST-HARVEST TREATMENTS ON SHELF LIFE AND QUALITY OF ORANGE (*Citrus reticulata* Blanco)

Ujjwal Bhatta and Binayak P. Rajbhandari

The study "Effect of Post-Harvest Treatments on Shelf Life and Quality of Orange (*Citrus reticulata* Blanco)" was conducted from 20 February 2026 to 16 March 2026 at the laboratory of the Himalayan College of Agricultural Sciences and Technology (HICAST), Nepal. The experiment was carried out under ambient storage conditions to evaluate the effect of post-harvest treatments on quality and shelf life of orange fruits. Four treatments were used: TI Control, T2 Chitosan 2%, T3 Aloe vera gel and T4 = Calcium chloride 2%, arranged in a Completely Randomized Design (CRD) replicated 3 times. Physical parameters such as physiological loss in weight (PLW), fruit diameter, and firmness, and chemical parameters including Total Soluble Solids (TSS), Titratable Acidity (TA), and sugar-acid ratio were recorded during storage. At 24 days of storage, the highest PLW was observed in the control (42%), while the lowest was recorded in Chitosan 2% and Aloe vera gel (35%). Chitosan 2% maintained the highest fruit diameter (45.8 mm) and firmness (70.51 N) compared to the control. TSS increased in all treatments, with the highest value in the control (21.63°Brix), whereas Chitosan 2% showed the lowest TSS (16.20°Brix). Titratable acidity was highest in Aloe vera gel and $CaCl_2$: 2% (0.87%), while the control had the lowest (0.60%). The study concluded that post-harvest treatments

improved shelf life and quality of orange under ambient conditions. Among the treatments, Chitosan 2% was found to be the most effective, followed by Aloe vera gel, in reducing weight loss, delaying ripening, and maintaining fruit quality.

Keywords: Aloe vera, $CaCl_2$, Chitosan, TA, TSS

STUDY ON THE TRADITIONAL AND MODERN RICE STORAGE METHODS IN SIRAHA DISTRICT

Dipak Mandal and Rajendra Bhattarai

Rice (Oryza sativa L.) is Nepal's most important cereal crop, contributing approximately 20% to agricultural GDP and fulfilling nearly 40% of daily caloric needs. However, post-harvest storage losses remain a significant challenge, particularly in the humid Terai region. This study was conducted in Kalyanpur Rural Municipality, Siraha District, Madhesh Province, with the objectives of assessing post-harvest losses under traditional and modern storage methods and documenting prevailing storage practices among farmers. Primary data were collected from 100 rice farming households using structured questionnaires, supplemented by one Key Informant Interview and one Focus Group Discussion. Descriptive statistics and an independent samples t-test were used for analysis. Results showed that 70% of respondents were male, 38% were illiterate, and the majority fell within the 41-60 age group. Bamboo structures (*Bhakari / Kothi*) were the most common traditional storage method, while metal bins dominated modern storage. Farmers using traditional methods recorded a mean post-harvest loss of 4.90%, compared to 3.44% for modern method user showing statistically significant difference ($t=2.22$, $p=0.029$). The lesser grain borer (86%), rice moth (59%), and rice weevil (55%) were the insect pests, while rodents posed the greatest non-insect threat (85%). Limited adoption of modern technologies was attributed due to high costs, insufficient technical knowledge, and inadequate government support, with 70% of farmers receiving no financial assistance. The study concludes that

modern storage methods significantly reduce post-harvest losses. Targeted subsidies, village-level training, credit access, and demonstration programs are recommended to support smallholder farmers in adopting improved storage practices.

Keywords: Hermetic bag, Kothi, post-harvest loss, rice storages

EFFECT OF THE PRESERVATIVE ON VASE LIFE AND POSTHARVEST QUALITY OF ROSE

Ekta Niraula and Himal Bhusal

A laboratory-based study was conducted at the Warm Temperate Horticulture Centre (WTHC), Kirtipur, Kathmandu, from 27 January to 10 February 2026. Cut stems of the 'Red Naomi' rose variety, sourced from Himalayan Floriculture Farm, Badhikhel, Kathmandu, were used as experimental material. The primary objective was to identify preservative treatments that best sustain postharvest quality and maximize the display longevity of fresh-cut roses. Five quality attributes were monitored throughout the trial: solution uptake, flower weight, flower head diameter, stem diameter, and vase life duration. Six treatments T1: Tap water, T2: Distilled water, T3: 4% Sucrose + 200 ppm ascorbic acid, T4: 200 ppm Salicylic acid, T5: 4% Sucrose + 200 ppm Salicylic acid, and T6: 4% Sucrose + 100 ppm silver nitrate were arranged in a Completely Randomized Design (CRD) with four replications. Statistical analysis was performed in RStudio, and one-way ANOVA revealed significant differences among treatments for all measured parameters ($p < 0.05$). T3 proved most effective, yielding the broadest flower head diameter (76.19 mm), longest vase life (14.00 days), and highest freshness score (3.50). T2 recorded the greatest solution uptake (0.116 g per stem), while T6 demonstrated superior stem turgidity, with the highest final stem diameter (5.19 mm) and greatest cumulative weight gain (0.025 g). Based on these findings, the combination of sucrose and ascorbic acid is recommended as a cost-

effective, readily available preservative for growers and florists seeking to extend the vase life of fresh-cut roses.

Keywords: Ascorbic acid, CRD, distilled water, salicylic acid, sucrose

VALUE CHAIN ANALYSIS OF COFFEE PRODUCTION IN GANGAJAMUNA RURAL MUNICIPALITY, DHADING, NEPAL

Kamana Kumari Singh and Tilak Raj Chaulagain

Coffee has emerged as a promising high-value cash crop in Nepal's mid-hills, offering farmers roughly four times higher returns than traditional cereals. This research examines the financial viability and value chain of Arabica coffee production among smallholder farmers in Gangajamuna Rural Municipality, Dhading, Nepal. This local level was purposively selected due to the availability of sufficient coffee farmers actively involved in production and marketing. A sample size of 80 was determined using Cochran's formula, and data were collected in a simple random manner through a semi-structured questionnaire. Both quantitative and qualitative data were gathered to understand production practices, income levels, input availability, and market access. The collected data were first organized using MS Excel, and then analyzed using descriptive statistics, cost-return analysis, gross margin, net margin, and benefit-cost (B/C) ratio calculations in Stata (v17). The findings indicate that coffee cultivation has significant potential to improve household income and strengthen rural livelihoods in Dhading. Results showed that coffee production is profitable, with the B/C ratio increasing from 1.25 for fresh cherry to 2.13 for coffee powder, indicating the importance of value addition. Most farmers practiced intercropping (75%) and shade management (92%), while 94% marketed coffee through cooperatives. However, productivity and income were constrained by limited irrigation, White Stem Borer infestation, inadequate training, poor infrastructure, and weak market information systems. Coffee has strong economic potential in Dhading, and improving value addition, irrigation, extension services, quality

seedlings, and market access can enhance farmer income and strengthen the value chain.

Keywords: B: C ratio, financial analysis, market channel, net margin, value addition

COMPARATIVE STUDY OF TOMATO PRODUCTION IN POLYHOUSE AND OPEN FIELD CONDITION IN DHUNIBESI MUNICIPALITY, DHADING

Roshmi Basnet and Rojan Karki

The study entitled "Comparative Study of Tomato Production in Polyhouse and Open Field Cultivation in Dhunibeshi Municipality, Dhading" was conducted during the 2025 cropping season to compare the productivity, profitability, and constraints of tomato cultivation under polyhouse and open field systems. A descriptive and analytical research design was adopted. Primary data were collected from 80 tomato farmers through face-to-face interviews using a pre-tested semi-structured questionnaire. Respondents were selected through purposive and simple random sampling techniques. The study found that the cost of production was higher in polyhouse (NRs. 56,999.65 per ropani) than in open field farming (NRs. 25,434.55 per ropani). But the use of polyhouse produced higher gross return (NRs. 130,973 per ropani), net return (NRs. 73,973.32 per ropani), and B:C ratio (2.18) than open field farming (NRs. 41,777.7, NRs. 16,343.15, and 1.64 respectively). Major constraints identified in both systems included diseases and pests, limited market access, price fluctuation, high input costs, and inadequate irrigation facilities. The research shows that polyhouse is more profitable, economically sustainable, and environmentally friendly, despite the increase in the cost of production. But open field farming is also an appropriate and affordable option for seasonal production, especially for resource-poor farmers. Thus, dissemination of polyhouse technology should be supported with the provision of technical

assistance and subsidies, and adoption of better pest control and market access in both systems.

Keywords: B: C, dissemination, efficiency, inadequate, productivity

PREVALENCE OF MAJOR DISEASES IN SWEET ORANGE AND THEIR MANAGEMENT PRACTICES IN SINDHULI

Mahima Khatri and Subeksha Shrestha

Sweet orange (Citrus sinensis L. Osbeck), locally known as Junar, is a major cash crop in Nepal's mid-hills, Sindhuli district, the country's second-largest producer, has seen yields fall sharply in recent years, driven largely by rising disease. This study assessed the prevalence of major diseases and management practices in sweet orange orchards across three municipalities in Sindhuli district, Nepal. A survey of 110 farmers using semi-structured questionnaires, focus group discussions, and field observations was conducted. Quantitative findings revealed that powdery mildew was the most severe disease (DSI-0.67, prevalence-57.27%), followed by gummosis (DSI-0.59, prevalence=51.82%) and citrus greening/HLB (DSI-0.47, prevalence-33.64%). Disease severity was highest during the new flushing (67.27%) and flowering stages (60%). All farmers (100%) adopted cultural practices including sanitation, pruning, and training: 95% used chemical fungicides (primarily copper oxychloride and carbendazim), with 41% applying them only symptomatically rather than preventively. Mechanical practices showed high adoption (90.09% for Bordeaux mixture/paste), but biological control methods had minimal uptake (34%). Poor orchard management practices ranked as the primary disease-causing factor (limp-0.73), followed by inadequate use of fungicides (limp=0.62) and diseased planting materials (limp-0.59). Farmers identified four major challenges: absence of specialist monitoring, lack of input subsidies, unavailability of certified disease-free planting materials, and need for practical demonstration farms. Despite disease pressures causing significant yield losses, 81% of farmers expressed willingness to expand

orchards with adequate support, highlighting sweet orange's continued economic importance in the region.

Keywords: Citrus greening, *Citrus sinensis*, disease severity index, new flushing

ADOPTION STATUS AND ECONOMIC ANALYSIS OF CLIMATE-SMART AGRICULTURAL PRACTICES AMONG POTATO FARMERS IN BHAKTAPUR

Vedika Bhandari and Binayak P. Rajbhandari

This study assessed the adoption status and economic performance of Climate-Smart Agriculture (CSA) practices among 100 potato-farming households in Bhaktapur District, Nepal. Using the Adoption Index (AI), benefit-cost ratio (BCR) analysis, ANOVA, and chi-square tests, farmers were classified into low (15%), medium (68%), and high (17%) adoption categories. The mean Al was 44.35%, indicating moderate overall adoption. Farmyard manure (100%), field monitoring (88%), and weather information use (83%) were the most adopted practices, reflecting their low-cost nature and cultural familiarity. In contrast, drip irrigation, soil testing, and mulching showed near-zero uptake, a pattern attributed through field observation to high installation costs, limited technical knowledge, and inadequate extension coverage. The socioeconomic profile revealed that 66% of farmers had primary or no formal education, a structural barrier to adoption of more technically demanding practices. The mean BCR was 0.824, indicating overall financial losses (average net loss: NRs 10,245). High adopters produced significantly greater yields (1,878 kg) than low adopters (942 kg; $p = 0.039$), yet BCR did not differ significantly across groups ($p = 0.903$), as higher revenues were offset by higher production costs. These findings suggest that while CSA adoption enhances productivity, current market and input cost conditions prevent it from translating into improved economic efficiency.

Keywords: Adoption Index, Benefit-Cost Ratio, Economic Analysis, Production Cost, Technology

ASSESSMENT OF PLASTIC TUNNEL TECHNOLOGY ADOPTION AND ITS EFFECT ON TOMATO YIELD IN NUWAKOT

Jay Kishor Yadav and Bishnu P. Bhattarai

This study assessed the adoption of plastic tunnel technology and its effect on tomato yield among smallholder farming households in Nuwakot District, Bagmati Province, Nepal. A mixed-methods research design was employed, combining structured household questionnaire surveys administered to 103 respondents from Kispang and Myagang Rural Municipalities, selected through Slovin's formula and proportionate random sampling, alongside key informant interviews and direct field observation. The surveyed farming population was predominantly middle-aged (46-55 years, 56%), attained lower-secondary education (76%), and operated on smallholder land bases of 2-5 ropani, with a strong preference for high-yielding hybrid tomato varieties (74.5%). Plastic tunnel adoption was near-universal at 96.1%, driven by sustained NAMP Nuwakot promotional campaigns, government subsidy support, and compelling peer demonstration effects from pioneering farmers in the communities. Tunnel cultivation produced a mean yield of 2,475 kg per ropani compared to 880 kg per ropani under open-field conditions, a 181.3% increase, attributable to the improved microclimate within tunnels, reduced pest and disease pressure, and extended spring off-season growing periods. Economically, 93.1% of adopters sold produce at premium off-season market prices, over half (51.0%) earned annual gross incomes exceeding Rs. 2,00,000 from tomato farming, and benefit-cost analysis across respondents returned a mean BCR of 1.66 (median and mode: 1.68), confirming robust commercial viability well above the break-even threshold. The study recommends expanding agricultural credit with crop-cycle-aligned repayment terms, strengthening technical training

and extension services, improving market linkage infrastructure, and revising the subsidy framework to be more equitable and accessible, to consolidate and scale the gains already achieved through plastic tunnel technology in Nuwakot District.

Keywords: Benefit-cost ratio, microclimate, off-season production, plastic tunnel, protected cultivation, smallholder farmers, tomato yield

PRODUCTION AND ECONOMIC ANALYSIS OF MANDARIN (Citrus reticulata) IN NAWALPARASI, EAST

Subigya Khanal and Shanta Man Shakya

The current study, titled Production and Economic Analysis of Mandarin Farming in Nawalparasi East", was carried out in Bulingtar and Baudhikali Rural Municipalities of Nawalparasi East, Gandaki Province, Nepal, during the 2025/26 season. The objective of the study was to conduct an economic analysis, determine production constraints, and assess the marketing and institutional arrangements for mandarin (Citrus reticulata Blanco) cultivation. The mean total cost of production was NPR 27,395.60, the mean gross income was NPR 61,835.16, and the mean net profit was NPR 34,439.56, yielding a mean Benefit Cost Ratio of 1.92, indicating economic profitability. However, the majority of the respondents (88.89%) felt the profitability of mandarin farming to be moderate to below average. Symptoms of citrus decline were found in 75.26% of farms and were considered the most important production constraint, whereas irrigation shortages and limited marketing opportunities were the other two important constraints. Intermediaries dominated the marketing strategy of mandarins; 94.85% of farmers sold their produce to intermediaries, who paid only NPR 36-50/kg to the farmers. Only one third of respondents (34.02%) received technical advice on the management of citrus decline symptoms. The conclusion drawn from this research is that mandarin farming is economically feasible, but needs effective disease management practices with more focus on citrus decline.

Keywords: Benefit-Cost Ratio, citrus decline, Huanglongbing, intermediaries, NAMP

COMPARATIVE VARIETAL PERFORMANCE AND ECONOMIC ANALYSIS OF POTATO CROP IN RASUWA DISTRICT

Sandesh Kalu and Shanta Man Shakya

The current study titled 'comparative varietal performance and economic analysis of potato crop in Rasuwa district' is aimed to comparatively assess the socio-demographic and farming profile of potato-growing households, evaluate the benefit-cost ratio (BCR) of local (Seto Aalu) and improved (MS-42) potato varieties, and identify the major constraints and possible remedies for improved variety adoption in Kalika and Naukunda Rural Municipalities of Rasuwa District, Nepal. A survey was conducted among 100 potato-farming households selected through simple random sampling. Primary data were collected with the help of a pre-tested semi-structured questionnaire. The results showed that per Ropani (500 sq. m.) average yield, net profit and Benefit-cost ratio (B:C) of improved variety MS-42 was 1076 kg. NRP 19,994.19 and 3.49 compared to 604 kg., NRP 6,554.47 and 2.04 in case of local variety Seto Aalu, respectively. The respondent's level of varietal yield satisfaction through scoring on 5-point scale showed that almost 74% respondents gave 4-to-5-point score in case of MS-42 compared to only 3 points by more than 50% respondents in case of Seto Aalu. Major constraints included high seed cost (25% respondents), non-availability of certified seed (20% respondents), climate variability (20% respondents), and disease pressure (10% respondents). MS-42 is economically and technically superior under agro-climatic conditions of the study area; nevertheless, local varieties retain relevance for their climate resilience and cultural acceptability. Scaling up improved variety adoption requires coordinated policy interventions in seed supply, extension services, market linkage, and rural credit access.

Keywords: Benefit-cost ratio, questionnaire, satisfaction, remedies, respondents

PRODUCTION AND POST HARVEST PRACTICES OF POTATO AND ITS ROLE IN INCOME GENERATION AT RASUWA DISTRICT

Bishal Chaudhary and Bishnu P. Bhattarai

Solanum tuberosum L. (potato) is the primary cash and food crop of smallholder farming households in the high-hill districts of Nepal. This study assessed the existing production and post-harvest practices of potato and their role in household income generation in Rasuwa District, Bagmati Province. Using the Taro Yamane formula, 100 respondents were selected through random sampling across all five rural municipalities of the district. Primary data were collected via structured household interviews and field observations and analyzed using descriptive statistics. 68% farmers cultivated improved varieties in the winter season, with 88% sourcing seed from government supply programs and 96% using power tillers for land preparation. Late blight (Phytophthora infestans) was the dominant disease constraint, reported by 59% of respondents, and managed primarily through chemical fungicide application (74%). Average yield was estimated at 16,248.99 kg per hectare (approximately 16.2 t/ha), substantially below the achievable potential of 20-25 t/ha. Post-harvest losses arising from inadequate storage, poor handling, and weak market linkages significantly eroded farm income. Economic analysis revealed a gross revenue of Rs.4,70,408.26, net return of Rs. 2,86,783,86 per hectare, and a benefit-cost ratio of 2.56, confirming the profitability of potato cultivation under existing conditions. Seed quality, late blight management, and limited market access were identified as the major constraints.

Keywords: Benefit-cost ratio, food security, improved varieties, market access, smallholder farmers.

EFFECT OF CALCIUM CHLORIDE ON THE POST-HARVEST QUALITY OF TOMATO (*Solanum lycopersicum* L.)

Nabin Singh and Himal Bhusal

Postharvest loss in tomatoes is a significant concern due to rapid deterioration after harvest. This study evaluated the effect of different concentrations of calcium chloride on shelf life and quality of tomato (Solanum lycopersicum L., cv. Sahoo) at ambient storage. The experiment was conducted at Himalayan College of Agricultural Science and Technology (HICAST), Kirtipur Nepal, during the period from 7th of March-27th of March 2026. Fruits was harvested at the breaker stage were dipped in distilled water (control) and $CaCl_2$, solutions at 0.5%, 1.5%, 2%, 2.5%, and 3% for 15 minutes, air-dried and stored at211 and 49±1%RH. The experiment was laid out in a completely randomized design (CRD) with 3 replications. physiological loss in weight (PLW), juice content (JC), total soluble solids (TSS), Firmness, Spoilage loss and pH was recorded at 4-day intervals over 20 days. Data were analyzed using GenStat software at a 5% level of significance. CaCl2 treatments significantly improved fruit firmness, reduced physiological loss in weight, delayed ripening, and extended shelf life compared to the control. Concentration of 1.5-2.5% $CaCl_2$ were most effective in maintaining quality without causing physiological injury.

Keywords: Tomato, calcium chloride, postharvest quality, physicochemical parameters.

PERFORMANCE OF BIOFORTIFIED POTATO (*Solanum tuberosum*) GENOTYPES IN LALITPUR

Aarti Chaudhary and Yubaraj Bhusal

Potato (*Solanum tuberosum*) is an important food and cash crop in Nepal. The study entitled "Performance of Biofortified Potato (Solanum tuberosum) Genotypes in Lalitpur was conducted in National Potato

Research program (NPRP) from Magh 5th to Chaitra 17th, 2082 B.S. (31 March2025) to evaluate the growth and development of Bio-fortified potato genotypes. The experiment was laid out in a Randomized Complete Block Design (RCBD) with 9 genotypes and 3 replications. Data on vegetative parameters were recorded and analyzed using Microsoft Excel 2013 and IBM SPSS software. The study revealed significant variation among the genotypes for most vegetative parameters. CIP 312764.013 showed the highest germination percentage (70.83%) at 30 days after planting (DAP), whereas Khumal Rato-4 recorded the highest germination (94.63%) at 45 DAPS. CIP 312721.004 produced the tallest (60.1cm) plants and higher ground cover (71.67%), indicating vigorous vegetative growth and better canopy development. Similarly, CIP 312725.128 exhibited the highest number of stems per plant (4.53), better plant vigor (3.67) and good plant uniformity (3.33), showing superior adaptability. In contrast, CIP 312735.051 showed comparatively poor performance in most observed traits. Based on the combined evaluation of pre-harvest parameters, CIP 312725.128 was identified as the most promising genotype among tested genotypes.

Keywords: Adaptability, development, growth, RCBD, vegetative parameters.

COMMERCIAL POTATO PRODUTION AND ITS ROLE IN INCOME GENERATION IN BHAKTAPUR DISTRICT. NEPAL

Jay Kumar Chaudhary and Himal Bhusal

The study entitled "Commercial potato production and its role in income generation in Bhaktapur district" was conducted from January to March, 2026. The study was carried in three Municipality of Bhaktapur district, using a set of semi structured questionnaire. Both genders were found to be involved in Potato production in the study area. A total of 55% of the respondents were male and reaming 45% where female was involved in agriculture. The age group between 25-59 was actively involved in the study area Agriculture is the main source of household income in the

respondents in the study area. Literacy rate was 90%, Janak Dev (40%) was the dominant variety followed by the Khumal seto - l variety. 32% damaged was caused by Aphids and followed by Cutworm which was 31% in the field of farmers and 77% farmers reported that Late blight of potato disease was the most affected the field of respondents. Traditional farming, irrigation facility, lack of extension service related to the potato production and post-harvest management. In the study area there was also lack of improved disease resistant variety and certified seed or farmer saved seed were the main seedling. 90% of the respondents said that they were cultivating in the month of December and 75% of the respondents said that the reason behind choosing potato cultivation was due to moderately income and enhance rural livelihoods, reduce poverty, and ensure food security. 85% of the respondents were inspired by own farmers to cultivate commercial potato farming. 81% of the respondents were satisfied from potato farming and improved in their living standard of the farmers. Comparatively than other district of Nepal in Bhaktapur cost of cultivation was medium low so they generate moderately income and easily get market in wholesale. The benefit cost of ratio (BCR) was 1.76 which more income from potato farming. Also 5% of the respondents said that Bio pesticides use in to control pest. Timely field sanitation, crop rotation and disease resistance variety will be better for quality and more production.

Keywords: Aphids, disease resistant, problem, technology, variety

MUSHROOM PRODUCTION AND INCOME GENERATION AMONG MUSHROOM ENTERPRENEURS IN KATHMANDU VALLEY

Anu Poudel and Bidur Prasad Chaulagain

This study assessed mushroom production and its role in income generation and livelihood improvement in Kathmandu Valley. A total of 100 mushroom farmers from Kathmandu, Lalitpur, and Bhaktapur districts were surveyed using structured interviews. Descriptive

statistics, benefit-cost (B:C) analysis, and multiple linear regression were used for data analysis. Results showed that mushroom farming is predominantly practiced by middle-aged farmers (35% aged 25-40 years), with female participation (55%) slightly higher than males. Average production was 28.5 kg per cycle, with oyster mushroom as the most cultivated variety (65%). The economic analysis revealed a B:C ratio of 1.34, indicating moderate profitability. Average annual revenue was NRs 57,000, total cost NRs 42,500, and net income NRs 14,500 per cycle. Regression analysis (R2 0.916) showed that land size (p=0.007) and farming experience (p=0.006) had significant positive effects on income, while training and market access were not statistically significant. Major constraints included disease/pest infestation (45%), lack of quality spawn (30%), perishability (72%), and price fluctuation (68%). Livelihood assessment indicated that 55% of farmers reported improved income stability, and 30% reported increased household employment. The study concludes that mushroom farming in Kathmandu Valley is economically viable but constrained by weak market infrastructure and production inefficiencies. Recommendations include improving cold storage facilities, strengthening cooperative marketing, and providing practical, follow-up-based training programs.

Keywords: B: C ratio, cooperative, market, spawn, storage facility

EFFECT OF DIFFERENT COMBINATIONS OF NPK FERTILIZERS AND ORGANIC MANURE ON GROWTH AND YIELD OF CAULIFLOWER (*Brassica oleracea* var. botrytis) IN CHITAPOL, BHAKTAPUR

Pushpa Goit and Binayak P. Rajbhandari

This study was conducted to assess the effect of different combinations of NPK fertilizer and organic manure on the growth and yield of cauliflower (*Brassica oleracea* var. botrytis). The main objective of the study was to identify the most suitable integrated fertilizer – manure combinations for improving cauliflower growth, yield attributes, and

production under local field conditions. The experiment was carried out at the Industrial Entomology Development Farm of the NAMP, Chitapol, Bhaktapur, from 8 Jan to 24 April 2026 using the cauliflower variety Snow Mystique. The experiment was laid out in RCBD with four treatments and five replications. The treatments were T1 (control with, T2, T3 and T4. The FYM was applied uniformly to all plots. Data were collected on plant height, number of leaves, leaf area index, curd weight, curd diameter, biomass, number of curds per plot, and yield per plot. The collected data were analysed using Analysis of Variance (ANOVA). The results showed that T3 produced the best performance in yield parameters and recorded the highest curd weight of 896.0 g, curd diameter of 13.88 cm, biomass of 1755.6 g, and yield of 17.47 kg per plot. Although T4 showed higher vegetative growth in some stages, it produced lower yield than T3, indicating that excessive fertilizer application was not beneficial. Therefore, the recommended NPK dose of 200-120-100 kg ha with organic manure is concluded to be the most suitable combination for cauliflower production in Chitapol, Bhaktapur.

Keywords: Biomass, curd, LAI, plant height, snow mystique

EVALUATION OF PROMISING POTATO (*Solanum tuberosum* L.) VARIETIES FOR YIELD PERFORMANCE, IN CHITTAPOL, BHAKTAPUR

Sabitri Acharya and Binayak P. Rajbhandari

Potato (*Solanum tuberosum* L.) is an important food and cash crop in Nepal, contributing significantly to food security and farmers' income, especially in the mid-plant regions. The present study, entitled "Evaluation of Promising Potato (*Solanum tuberosum* L.) Varieties for Yield Performance in Chittapol, Bhaktapur," was conducted to assess the growth and yield performance of five potato varieties under the agro-ecological conditions of Bhaktapur district. The experiment was laid out in a Randomized Complete Block Design (RCBD) with five treatments and four replications. The tested varieties were Janak Dev, Cardinal,

Desire, MS 42.3, and IPY 8. Data were collected on major growth and yield parameters, including plant height, number of stems, branches, leaves, leaf area index, number of tubers per plant, average tuber weight, and yield per plant. Statistical analysis was performed using analysis of variance (ANOVA), and treatment means were compared using the LSD test at a 5% level of significance. The results showed significant variation among the tested varieties for most of the observed traits. Among them, Janak Dev exhibited the best overall performance, recording the highest number of tubers per plant (15.30), the highest average tuber weight (30.27 g), and the maximum yield per plant (749.50 g). In contrast, IPY 8 produced the lowest yield (322.25 g per plant). The superior performance of Janak Dev indicated its better adaptability and yield potential under the local conditions of Chittapol, Bhaktapur.

Keywords: Adaptability, biomass production, cultivar assessment, growth attributes

FACTORS GOVERNING THE PURCHASE OF LOCALLY PRODUCED AGRICULTURAL PRODUCTS IN KATHMANDU VALLEY

Alina Katwal and Tilak Raj Chaulagain

This study entitled "Factors Governing the Purchase of Locally Produced Agricultural Products in Kathmandu Valley" was conducted to analyze the socio-demographic and behavioral factors influencing consumers' purchase frequency of locally produced agricultural products. The study was carried out in Kathmandu Valley, covering Kathmandu, Lalitpur, and Bhaktapur districts. A total of 100 respondents were selected using a non-probability convenience sampling method, and primary data were collected through face-to-face interviews using structured and semi-structured questionnaires. Secondary information was obtained from journals, reports, government publications, and previous research studies. The collected data were analyzed using descriptive statistics and ordinal logistic regression analysis through SPSS software. The findings

revealed that most respondents were aware of locally produced agricultural products and generally held positive perceptions regarding their freshness, health benefits, and contribution to supporting local farmers and the domestic economy. However, the majority of respondents purchased these products only occasionally. The ordinal logistic regression analysis showed that gender had a statistically significant influence on consumers' purchase frequency, whereas age, education, perceived quality, price perception, consumer awareness, trust and brand, attitude and preference, and social and cultural influence were not statistically significant. The results suggest that consumers' purchasing behavior toward locally produced agricultural products is influenced by multiple factors and cannot be explained by a single variable alone. The study concludes that improving product availability, accessibility, branding, packaging, and promotional activities may encourage more frequent purchases of locally produced agricultural products and contribute to the promotion of sustainable agriculture and local market development in Kathmandu Valley.

Keywords: Accessibility, consumer behavior, health benefits, purchase frequency, regression analysis

FARMERS' PERCEPTION OF CLIMATE CHANGE AND ITS IMPACT ON WHEAT FARMING IN DHANUSHA DISTRICT

Rajat Kapar and Namita Nepal

This study was conducted in Dhanusha District to understand farmers' perceptions of climate change and its impacts on wheat production. The survey was carried out in four rural municipalities, and a total of 100 wheat-growing farmers were interviewed. Primary data were collected through household surveys, direct observations, focus group discussions, and key informant interviews. Secondary data on wheat area, production, and productivity were collected from various published sources. The results showed that 89% of the respondents were aware of climate change, while 11% were not aware of it. Most farmers observed changes

in temperature, rainfall patterns, droughts, floods, and other extreme weather events over the years. These changes were reported to have affected wheat production by reducing yields, increasing production costs, and lowering household income. Some households also experienced migration of family members in search of alternative sources of income. Farmers adopted different measures to cope with the changing climate, such as changing sowing dates, using improved seed varieties, improving irrigation practices, and diversifying crops. However, they faced several challenges, including limited irrigation facilities, lack of technical knowledge, inadequate access to climate information, and financial constraints. The collected data were analyzed using descriptive statistical tools such as frequencies, percentages, tables, and charts. The study provided insights into how climate change affected wheat farming in Dhanusha District and how farmers responded to these challenges. The findings highlighted the need for practical and climate-resilient agricultural interventions to improve wheat production, strengthen farmers' livelihoods, and enhance food security in Nepal.

Keywords: Agricultural vulnerability, climate-smart practices, food security, intervention, rural livelihoods,

ECONOMIC ANALYSIS OF IMPROVED AND LOCAL POTATO VARIETIES IN NILKANTHA MUNICIPALITY, DHADING DISTRICT

Ajay Kumar Yadav and Binayak P. Rajbhandari

The present study on "Economic analysis of improved and local potato varieties in Nilkantha municipality, Dhading district, Nepal" was conducted by using research tools such as semi structured questionnaire, Interview, key information and field observation. A total of 100 respondents were involved in this study. Five FGDs were conducted on each study site and 3 key informants were interviewed for the source of in-depth knowledge, experience, and insight into previous activities. Secondary data were collected from variety of published literature

sources, including books, journals, documents, research paper and annual reports of MOALD. In study areas identified improved potato varieties (Janakdev, Khumalrato, Khumalseto) adopted by farmers. In both varieties, pest and disease control are the most significant challenge. In the study area, 65 of formers used improved varieties and 35 farmers used local. The seed source of farmer both varieties are 60% from agrovet, and few are from cooperative and self. Mean yields of improved and local was 25 t/ha and 18 t/ha. Data analyzed using descriptive statistical tools such as frequency, percentage, tables, and charts, Improved potato varieties produced higher yields and better economic returns than local varieties. Their better seed quality, response to fertilizers, and resistance to pests and diseases contributed to increased productivity. Farmers faced several challenges in adopting improved potato varieties, including high input costs, post-harvest losses, pest and disease problems, poor-quality seed, and lack of irrigation facilities.

Keywords: Constraints, fertilizer, marketing, productivity, varieties

IMPACT OF COMMERCIAL TOMATO PRODUCTION AND ITS ROLE IN INCOME GENERATION IN NAWALPARASI EAST DISTRICT

Sandip Oli and Namita Nepal

This study was conducted in Kawasoti Municipality, Ward 17, Nawalparasi-East District, Gandaki Province, Nepal, from February to March 2026, to assess the impact of commercial tomato production on income generation and household food security among smallholder farmers. A total of 100 respondents were selected using a multistage sampling technique, and primary data were collected through semi-structured questionnaire-based interviews, focus group discussions, and key informant interviews. Secondary data were obtained from published reports, journals, and government documents, and analyzed using descriptive statistics in MS Excel. The socio-demographic findings revealed that 72% of respondents were male and 28% were female, with

the majority (38%) falling in the 40-50-year age group, and agriculture was the primary occupation of 53% of respondents. Among the farmers, 48% cultivated tomatoes on their own land while 40% used leased land; the most widely grown variety was Surya (50%), followed by Amita (35%) and Kabita (15%), with canal irrigation as the predominant water source (54%), and 79% of farmers relied on chemical fertilizers. The study found that tomato production significantly contributed to household income: 54% of respondents earned NRs. 50,000-100,000 annually, 26% earned NRs. 100,000-200,000, and 20% earned above NRs. 200,000, while the benefit-cost ratio of 1.33 confirmed the enterprise's profitability. The dominant marketing channel was Channel III (producer-wholesaler-retailer-consumer), used by 69% of farmers, and market price fluctuation (36%) was identified as the leading production challenge. The study concludes that commercial tomato production holds considerable potential for income generation improvement in Nawalparasi-East, though sustained government support in training, storage infrastructure, and market regulation is essential to maximize its benefits.

Keywords: Smallholder farmers, marketing channel, semi-structured questionnaire, wholesaler, retailer.

EFFECTIVENESS OF LIVESTOCK INSURANCE: A CASE STUDY OF KAGESHWORI MANOHARA MUNICIPALITY, KATHMANDU, NEPAL

Aashish Luitel and Shiva Sundar Ghimire

Livestock insurance is an important risk management tool for farm households that depend on cattle, buffalo, goats, poultry, and other livestock enterprises for income and livelihood security. This study assessed the effectiveness of livestock insurance in Kageshwori Manohara Municipality, Kathmandu, Nepal. Primary data were collected from 160 respondents through a structured questionnaire, focus group discussions, and field observations, Descriptive statistics, percentages,

averages, claimant-only analysis, cross-tabulation, and graphical presentation were used for data analysis. The findings revealed that 60.6% of respondents were male and 39.4% were female, while 65.6% reported agriculture or livestock as their primary household occupation. Most respondents belonged to economically active age groups. Awareness of the government premium subsidy was reported by 79.4% of respondents, and 58.1% had experienced livestock losses during the previous three years. Among the respondents, 28.1% had claimed insurance compensation. For claimants, the average claim settlement period was 4.87 days, and 66.7% reported receiving compensation within the expected timeframe. However, compensation was more often perceived as partially adequate rather than fully adequate. Cow insurance constituted the largest share of insured livestock, followed by buffalo and goats. The mean insured amount per respondent was NPR 241,024.50, while the median insured amount was NPR 100,000. Overall, respondents expressed positive satisfaction with livestock insurance, although its contribution to financial risk reduction was generally rated as moderate. The study concludes that livestock insurance is a useful risk management mechanism but faces operational challenges. Faster claim settlement, simplified documentation procedures, stronger municipal support, and enhanced awareness programs are recommended to improve its effectiveness.

Keywords: Claim settlement, farm households, financial risk reduction, livestock insurance, premium subsidy.

EFFECTIVENESS OF AGRICULTURAL SUBSIDY IN ENHANCING CITRUS PRODUCTIVITY IN NAWALPARASI-EAST

Suyog Acharya and Rojan Karki

This study assessed the effectiveness of agricultural subsidies in enhancing citrus farm productivity among citrus farmers of Nawalparasi-East district, Nepal. The research was conducted in Bulingtar and

Baudhikali rural municipalities, two primary citrus-producing areas in the district, using a structured questionnaire survey administered to 50 purposively selected subsidy beneficiaries. Snowball sampling method, descriptive statistics, inferential analysis, and Likert scale evaluation were employed to analyze the data. The findings revealed a pronounced socio-demographic profile: respondents were overwhelmingly male (94%), predominantly middle-aged (58% aged 41-60 years), and had relatively low levels of formal education (54% with only primary schooling). Subsidy awareness was high (92%), and the majority of farmers successfully received subsidies, primarily for citrus seedlings (95.8%) and fertilizers (83.3%). A large majority (90%) reported increased citrus yield following subsidy utilization, with most experiencing a 25-50% improvement. Subsidies were perceived as effective or very effective by 80% of respondents, and all 50 farmers indicated they would recommend the programme to fellow farmers. However, significant challenges were identified: limited subsidy coverage (54%), insufficient subsidy amounts (60% found them inadequate), lack of market linkage support (80% identified as top priority need), and gender disparity in access. The study concludes that agricultural subsidies are broadly effective in improving citrus farm productivity in Nawalparasi-East, but require reforms in coverage, amount adequacy, market integration, and gender inclusivity to maximize their developmental impact

Keywords: Horticultural policy, input subsidy, rural income, smallholder farmers, subsidy effectiveness

PRODUCTION AND POST-HARVEST STATUS OF SUGARCANE IN KAILALI DISTRICT

Uttam Bhatta and Rajendra Bhattarai

This study assessed the production and post-harvest status of sugarcane (Saccharum officinarum L.) in Kailali district, Sudurpashchim Province, Nepal. Primary data were collected from 110 sugarcane-growing

households across seven purposively selected wards using a descriptive cross-sectional survey, supplemented by official secondary data. Descriptive statistics, cost and return analysis, benefit-cost ratio (BCR) estimation, and constraint ranking were used for analysis. Agriculture was the primary income source for 89.1% of respondents, with 35.5% in the 31-45 years age group. Co-0238 was the most cultivated variety, and most farmers relied on farm-saved or neighbor-sourced planting materials. Irrigation was limited to 4-9 applications per season, fertilizer use was nitrogen-heavy, and potash with organic manure remained inadequate. Stem borer and Red Rot were the dominant biological stresses. Post-harvest conditions were marked by manual harvesting and mill-yard waiting times exceeding 48-72 hours, resulting in significant stale cane losses. Economic analysis showed an average total variable cost of Rs 160,000.00 per hectare, with harvesting and transport consuming 67.89% of variable expenditure. Gross revenue averaged Rs 320,000.00 per hectare, net return Rs 160,000.00 per hectare, and BCR 2.00. High input costs, water scarcity, pest pressure, labor shortages, and delayed mill payments ranked as the leading constraints. The study concluded that sugarcane farming in Kailali is economically viable but structurally constrained, and recommended improvements in certified seed access, irrigation reliability, balanced nutrient management, mill-yard scheduling, and extension service delivery.

Keywords: Benefit-cost ratio, farm profitability, mill-yard waiting time

EFFECT OF DIFFERENT LEVELS OF BORON IN GROWTH AND DEVELOPMENT OF POTATO (SOLANUM TUBEROSUM L. cv. JANAKDEV) IN LALITPUR

Sonu K.C. and Yubaraj Bhusal

A field experiment was conducted at the research farm of the National Potato Research Program (NPRP), Khumaltar, Lalitpur, Bagmati Province, Nepal, to evaluate the effect of different levels of soil and foliar-applied boron on the vegetative growth parameters of potato (Cv.

Janakdev). The experiment was laid out in a Randomized Complete Block Design (RCBD) with seven treatments: a control (TO: recommended dose of fertilizer only) and six boron treatments using Borax (Na2B4O7.10H2O) as the boron source at 1, 2, and 3 kg / ha through both soil and foliar application in three replications. Statistical analysis revealed that plant emergence at 30 DAP ($F = 5.404$; $p < 0.01$) and 45 DAP ($F = 6.903$; $p < 0.01$) were highly significantly affected, and ground cover ($F = 3.567$; $p < 0.05$) was significantly affected by boron treatments, while plant uniformity, plant vigor, plant height, and number of main stems per plant were non-significant. Foliar boron treatments (T4, T5, T6) consistently outperformed soil-applied treatments, with T6 recording the highest plant emergence at 30 DAP (60.67%) and 45 DAP (62.33%), and T6 and T7 both achieving the highest ground cover (53.33%), representing a 23.1% improvement over the control. Soil application at 2 and 3 kg B/ha (T2, T3) significantly reduced plant emergence, likely due to localized phytotoxic boron concentrations in the seed zone.

Keywords: Emergence, RCBD, replication, statistical, treatments

PREVALENCE AND MANAGEMENT OF POST-EMERGENCE DISEASES IN VEGETABLE NURSERIES AT KATHMANDU DISTRICT

Safalta Khatiwada and Subeksha Shrestha

This study assessed the prevalence and management of post-emergence diseases in vegetable nurseries of Chandragiri, Tarkeshwor, and Nagarjun Municipalities of Kathmandu District. A total of 99 nursery operators were selected through random sampling, and data were collected using structured interviews and field observations. Most respondents were male (56%), aged 40-50 years (46%), had secondary-level education (34%), and relied primarily on agriculture for their livelihood (73%). The majority operated on rented land (79%) and raised tomato (Solanum lycopersicum L.) and cauliflower (Brassica oleracea

var. botrytis) seedlings in portrays using soilless growing media. Among the diseases recorded, damping-off was the most prevalent (80%), followed by downy mildew (52%), Alternaria leaf spot (47%), early blight (40%), Fusarium wilt (23%), and collar rot (16%). Disease incidence was highest between 10-20 days after seedling emergence (57%) and occurred predominantly during the rainy season (54%). Seedling losses were below 10% for 44% of respondents, while 37% reported losses between 10-25%. The study revealed that education level positively influenced the adoption of integrated disease management (IDM) practices. However, most nursery operators lacked adequate knowledge of disease identification, with 69% relying on agro-vets for diagnosis and only 21% consulting extension personnel. Chemical fungicides such as mancozeb, carbendazim, and metalaxyl were widely used, whereas biological and botanical control measures had limited adoption due to low awareness and poor availability. The findings highlight the need for improved disease diagnostic skills and greater promotion of IDM practices among nursery operators.

Keywords: Damping-off, disease incidence, integrated disease management, pathogen identification, seedling loss

EVALUATION ON SOIL FERTILITY STATUS AND CONSTRAINTS OF POTATO ZONE IN BHAKTAPUR

Shivani Mishra and Shova Shrestha

Soil fertility evaluation is an important factor influencing agricultural productivity and sustainability. This study was conducted to assess soil fertility status and identify major constraints in the potato and vegetable production zone under NAMP PIU Bhaktapur. A total of 76 farmers were randomly selected, and soil samples from their fields were analyzed in the laboratory. The results showed that soil fertility ranged from medium to high. Nitrogen content ranged from 0.02 to 0.25, with a mean of 0.14 and standard deviation of 0.04, indicating moderate fertility and low variability. About 68.42% of samples were in the medium nitrogen

category due to moderate use of organic manure and chemical fertilizers. Phosphorus ranged from 30 to 85, with 52.63% % medium, and 47.36% % high, likely due to balanced fertilizer use. Potassium ranged from 149.88 to 251.6, and all samples were in the medium category. Organic matter ranged from 0.53 to 5, with a mean of 2.84, mainly due to the use of farmyard manure and compost. Soil pH ranged from 3.7 to 7.9. The majority of soil samples were acidic in nature. May be due to high rainfall, continuous cropping, chemical fertilizer use, and limited liming practices may have contributed to soil acidity. Almost all farmers used chemical fertilizers, while organic manure was also common. Production trends showed that 37% of farmers reported increased production, 47% decreased production, and 16% no change. Major constraints included lack of fertilizer, high input costs, market problems, lack of irrigation, pest and disease issues, poor soil fertility, and limited technical knowledge. Overall, although soil fertility was generally moderate to good, soil acidity and socio-economic constraints significantly affected agricultural productivity.

Keywords: Fertility evaluation, potato cropping, soil fertility

STATUS OF OYSTER MUSHROOM PRODUCTION IN KATHMANDU VALLEY, NEPAL

Sunraj Tharu and Bidur Prasad Chaulagain

The status of oyster mushroom production (Pleurotus ostreatus) in the districts of Kathmandu, Bhaktapur, and Lalitpur in Nepal is examined in this study. Evaluating the status, behavior, and performance including cost and return analysis, marketing channels and price spread, and cost incurred by traders was the main goal. Purposive and random sampling were used to choose 93 respondents, including input suppliers, producers, distributors, retailers, and consumers. In 2025 and 2026, field observations and structured questionnaires were used to gather primary data. Data interpretation techniques included descriptive statistics, SWOT analysis, cost-benefit analysis, and marketing margin analysis.

Specialized spawn firms, agro-vets, local spawn suppliers, mushroom producers, production facilities, distributors, retailers, and consumers were the identified key value chain actors. With an average yield of 3,375 kg per ropani, the average cost of producing oyster mushrooms was NPR 369,600. The average benefit-cost (B/C) ratio of 1.415 indicated profitable production. Similar profitability (B/C = 1.49) was reported by Sharma & Chaulagain (2026) in Kathmandu Valley, while Acharya & Tiwari (2021) reported a higher ratio of 2.54 in Chitwan district, suggesting location-specific variation in profitability. Given packaging costs and retailer margins, the marketing margin for oyster mushrooms was NPR 145 per kg. Producer-wholesaler-retailer-consumer was the most popular marketing channel. A SWOT analysis showed that while high production costs and a lack of storage facilities were significant weaknesses, a suitable environment and national recognition were strengths. To improve the competitiveness and sustainability of the oyster mushroom industry in the Kathmandu Valley, the study suggests that governmental and non-governmental organizations carry out routine field inspections and establish minimum support prices.

Keywords: Cost of production, marketing channel, producer's share, value chain

SPATIAL AND VERTICAL VARIABILITY OF SOIL PROPERTIES OF LAHAN MUNICIPALITY, SIRAHA

Sabina Shrestha and Shova Shrestha

This study assessed the spatial and vertical variability of key soil physicochemical properties across Lahan Municipality, Siraha District. A total of 120 composite soil samples were collected from 40 georeferenced sites at two depths: surface (0-20 cm) and sub-surface (20-40 cm), using simple random sampling. Parameters analyzed included bulk density (BD), soil pH, organic matter (OM), available phosphorus (Av. P), total nitrogen (TN), available potassium (Av. K), and moisture content using standard laboratory methods. Bulk density (mean= 1.08g /

c * m ^ 3; CV = 10.87%) and soil pH (mean = 6.01, CV = 5.34%) exhibited low spatial variability, while OM (CV = 40.13%) Av. P ((CV= 46% surface; 143.6% sub-surface), TN (CV = 40.13%) and moisture CV = 42.74%) showed high variability driven by differential management practices. Paired t-tests confirmed significant vertical stratification for OM (13.011, p = 0.0046), Av. P (1 9.422, p < 0.001), TN (t = 3.011, p = 0.0046), and Av. K (t = 25.411, p < 0.001), with surface layers consistently higher than sub-surface, while pH showed no significant depth difference. Pearson's correlation revealed predominantly weak and non-significant inter-parameter relationships, suggesting management-induced heterogeneity dominates over natural pedogenic processes. These findings underscore the inadequacy of blanket fertilizer recommendations and provide the first comprehensive GIS-based soil fertility baseline for Lahan Municipality.

Keywords: Geo-statistics, interpolation, nutrient management, organic matter, soil fertility

GEOSPATIAL ASSESSMENT OF SOIL PROPERTIES OF GUJARA MUNICIPALITY, RAUTAHAT

Rajesh Shahi and Shree Prasad Vista

This study assessed the geospatial variability of soil fertility between surface (0-20 cm) and sub-surface (20-40 cm) layers across Gujara Municipality, Rautahat, Nepal. Forty georeferenced composite soil samples were collected from nine wards and analyzed for bulk density, soil pH, organic matter (OM), available phosphorus (Av. P), total nitrogen (TN), and available potassium (Av. K). Bulk density averaged 1.153 g/cm³, within the acceptable range for alluvial Terai soils. Soil pH was stable at both depths (6.34 and 6.36), classified as slightly acidic, with no significant vertical difference (p = 0.866). OM declined significantly from 1.593% (surface) to 1.133% (sub-surface), with TN and Av. K following the same trend. Av. P exhibited the sharpest stratification surface values (27.65 kg/ha) exceeded sub-surface values

(8.07 kg/ha) by more than threefold. Paired 1-tests confirmed highly significant depth differences for OM, Av. P, TN, and Av. K ($p < 0.001$). The only significant Pearson correlation was between surface and sub-surface Av. P ($r=0.446$, $p=0.004$). Spatial maps revealed OM and Av. P hotspots in northern and eastern wards. These findings confirmed that depth-stratified, geospatially guided soil management is essential for sustainable agriculture in Gujara Municipality.

Keywords: Available phosphorus, depth- stratified, organic matter, soil fertility, spatial variability

EFFECT OF BOTANICALS AND CHEMICAL PESTICIDE ON GROWTH AND DISEASE MANAGEMENT IN MUSKMELON NURSERY

Sibani Sah and Chudamani Bhattarai

A study on effect of botanicals and chemical fungicides on growth and disease management in muskmelon nursery was conducted at Giri Nursery and Agricultural Farm which is located in Chandragiri-1, under NAMP PIU, Bhaktapur with the objective to evaluate the effects of botanicals seed treatment and chemical fungicide (mancozeb) seed treatment on seedling vigor and Damping-off management in muskmelon nursery. The different treatments used were Neem (Azadirachta indica) leaf extract, Turmeric (Curcuma longa) rhizome extract, Moringa (Moringa oleifera) leaf extract at 5g/100 ml, mancozeb (75% WP) at 0.023g, and untreated control. The experiment was conducted with the muskmelon Variety 'Ruhan' in a Completely Randomized Design consisting of 5 treatments and 4 replications, with 20 trays and 50 seeds per tray. Data on germination, seedling vigor and damping off incidence were recorded and analyzed. The result showed the significant differences among the treatments for seedling vigor and damping off incidence. Mancozeb was the most effective treatment overall, giving the best disease control and seedling performance. Among the botanical treatments, Neem and Turmeric performed better

than moringa. Neem showed the best disease suppression among the botanicals, while turmeric also performed well for seedling vigor. The findings suggest that botanical seed treatments, particularly neem and turmeric, can be used as sustainable and environmentally safer alternative to chemical fungicides in muskmelon nurseries.

Keywords: Botanical extracts, damping off, Mancozeb, Muskmelon, Seedling vigor

VEGETABLE PRODUCTION AND ITS INCOME GENERATION IN NUWAKOT

Renu Yadav and Bishnu Prasad Bhattarai

This study was conducted to study the vegetable production and its role in income generation and livelihood improvement in Nuwakot District, Nepal. The objectives of the study are to identify major vegetable crops, examine farming practices, assess income contribution, and key challenges faced by farmers. Altogether 100 respondents were selected using simple random sampling. Both primary and secondary data were collected through household surveys, interviews, and literature review. The study show that potato is the dominant crop, followed by cauliflower, cabbage, tomato, and leafy vegetables. 78.26% of respondents were adopted improved practices such as mulching and hybrid seeds, traditional methods still prevail, with 57.97% of farmers practicing only one production cycle per year and relying on conventional irrigation systems. The study reveals that vegetable farming significantly contributes to household income, 47.83% of the respondents earning more than NPR 3 lakh annually. However, 23.19% of constraints limit productivity and profitability, including a lack of quality seeds, pest and disease problems, limited irrigation facilities, inadequate technical knowledge, and weak institutional support. Marketing challenges are particularly significant, as 36.23% of farmers face poor market access, high transportation costs, and heavy dependence on middlemen, resulting in low profit margins and

dissatisfaction with market prices. The study concludes that vegetable farming was strong potential to improve rural livelihoods in Nuwakot, but its full benefits can only be achieved through improved access to modern technologies, better extension services, efficient market systems, and strengthened institutional support.

Keywords: Dominant, extension services, institutional, mulching, respondents

EFFECT OF VEGETABLE PRODUCTION ON FARMERS' INCOME AND LIVELIHOOD IMPROVEMENT IN NUWAKOT DISTRICT

Bishaka K.C. and Bishnu Prasad Bhattarai

This study was conducted to study the effect of vegetable production on farmers' income and livelihood improvement in Nuwakot District, Nepal. The objective of the study was to identify vegetable production was contribute to household income, food security, and socioeconomic conditions of smallholder farmers. Altogether 100 respondents were selected by using simple random sampling. Both primary and secondary data were collected from household surveys, interviews, field observation, group discussion and literature review. According to the study, the majority of respondents were involved in vegetable farming as prime occupation and source of income. In farming community, 60.56% male were involved for vegetable cultivation. The study shows that pea was the major crop grown by farmers, followed by tomato, mustard and pumpkin. About 26.76% of rainfed irrigation was used by the respondents for vegetable farming to improve production. About 30% of the respondents were earning more than NPR 5 lakhs annually for vegetable farming to contribution in household income. However, challenges effects the full potential of vegetable production costs, pest and diseases problems, lack of technology and weak infrastructure. The study concludes that vegetable farming was strong potential to improve farmers income and livelihoods in Nuwakot, but it requires better support

for improving irrigation, access to credit, extension services and market development and strengthening in sustainability of vegetable farming.

Key words: Cultivation, food security, respondents, socioeconomic condition, sustainability,

COMPARATIVE ANALYSIS OF SOIL CARBON STORAGE ACROSS DIFFERENT LAND USE TYPES

Nimesh Dhakal and Prabesh Regmi

This study was carried out in Tarkeshwor Municipality, Kathmandu, Nepal entitled "Comparative Analysis of Soil Carbon Storage across Different Land Use Types" to assess and compare soil carbon storage under Forest, Bari (rainfed upland), and Khet (irrigated lowland) land-use systems. The study aimed to evaluate soil bulk density, soil organic carbon (SOC) percentage, and SOC stock across different land uses at 20 cm soil depth and to understand the relationship between soil physical and chemical properties influencing carbon storage. A stratified random sampling technique was used, and soil samples were collected from ten replicated sites for each land-use type. Bulk density was determined using the core method, while SOC was analyzed using the Walkley-Black wet oxidation method. SOC stock was calculated using bulk density, SOC percentage, and soil depth. The results showed clear variation among land-use systems. Bulk density was lowest in forest soil (1.13 g cm^3), followed by Bari (1.18 g cm^3), and highest in Khet (1.29 g cm^3). Similarly, SOC percentage and SOC stock were highest in forest soil (1.92% and 44.31 t ha'), and the lowest in Khet (1.16% and 29.57 t ha^1). A negative relationship was observed between bulk density and SOC, indicating that increased soil compaction is associated with reduced carbon storage. The findings suggest that forest ecosystems play a crucial role in maintaining higher soil carbon due to continuous litter input and minimal disturbance, whereas agricultural practices such as tillage, puddling, and residue removal reduce SOC and increase soil compaction. Overall, the study concludes that conversion of forest land

into agricultural systems significantly reduces soil carbon storage and alters soil physical properties, highlighting the importance of sustainable land management practices for enhancing soil carbon sequestration in the mid-hill region of Nepal.

Keywords: Bulk density, carbon sequestration, soil organic carbon

ECONOMIC ANALYSIS OF FISH PRODUCTION IN CHHIRESHWORNATH MUNICIPALITY, DHANUSHA DISTRICT, NEPAL

Rohan Sah and Rojan Karki

This study was conducted to evaluate the profitability of fish farming, assess marketing efficiency, identify major marketing channels, and examine consumer preferences and production constraints. Primary data were collected during the fiscal year 2024/25 through structured interviews with 45 fish farmers, 15 traders, and 30 consumers, supplemented by focus group discussions and field observations. Secondary information was obtained from government publications and relevant literature. The study revealed that the average total cost of fish production was NPR 533,272.37 per ropani per year, of which variable costs accounted for approximately 83 percent. Feed cost constituted the largest share of production expenses, followed by interest on loans and fertilizer costs. The average gross return was NPR 639,926.84, resulting in a Benefit-Cost Ratio (B/C) of 1.44, indicating that fish farming is a profitable enterprise in the study area. Four major marketing channels were identified, with the Producer-Wholesaler-Retailer-Consumer channel accounting for 62 percent of total marketed fish. The average marketing margin was NPR 79.28 per kilogram, while producers received 77.62 percent of the consumer price. Rohu was the most preferred fish species among consumers. Major constraints included inadequate processing and storage facilities, limited access to quality water sources, high electricity costs, and insufficient availability of feed and fingerlings. The study concludes that fish production in

Chhireshwornath Municipality is economically viable and recommends strengthening cold-chain infrastructure, improving market systems, and enhancing institutional support to increase productivity and marketing efficiency.

Keywords: Aquaculture profitability, benefit-cost ratio, consumer preference, marketing margin, producer's share

PERCEPTION AND CHALLENGES OF IPM TOOLS AND BIO-PRODUCTS IN KATHMANDU VALLEY

Babita Nepali and Lalit Shah

A field study was conducted to assess vegetable farmers' perception and challenges related to integrated pest management tools and bio-products in the Kathmandu Valley. Three districts, namely Kathmandu, Lalitpur, and Bhaktapur, were selected during the December 2025-May 2026 cropping season. Primary data were collected from 138 respondents comprising 105 vegetable farmers, 15 agro-vet dealers, 8 researchers and academicians, and 10 extension officers through structured and semi-structured questionnaires using purposive sampling. Secondary data were gathered from publications of MoALD, NARC, FAO, and national and international journals. Females constituted 55.24% of farmer respondents, reflecting their dominant role in vegetable cultivation. Farmers aged 30-39 years formed the largest age group, with primary level education and one to five years of experience on smallholdings of three to six ropani. Regarding knowledge and awareness, 55% of farmers reported very low knowledge of integrated pest management and 89% had never received any related training or attended a Farmer Field School. While 52% were aware of bio-products, 70% continued relying on chemical pesticides and only 42% had adopted any integrated pest management tools or bio-products. Sticky traps, pheromone traps, and Bacillus thuringiensis-based formulations showed limited familiarity among respondents. Farmers expressed positive perceptions toward environmental friendliness and health safety of these tools; however,

perceptions on bio-effectiveness and economic profitability remained predominantly negative. High cost of bio-products, inadequate training, poor shelf life, weak extension services, and easy availability of chemical alternatives were identified as the most critical adoption barriers.

Keywords: Adoption barriers, bio-pesticides, extension services, pesticide dependency, pheromone trap

CURRENT TRENDS AND SOCIO-ECONOMIC IMPACTS OF CLIMATE RESILIENCE AGRICULTURAL PRACTICES IN NUWAKOT DISTRICT

Prashansa Gautam and Hikmat Kumar Shrestha

This study assessed the current trends and socio-economic determinants of climate-resilient agricultural practice (CRAP) adoption among smallholder farming households in Nuwakot District, Bagmati Province, Nepal. Three specific objectives guided the study: identifying adoption trends and status, analyzing farmer perceptions and key drivers and barriers, and evaluating socio-economic impacts on household income and production. A descriptive cross-sectional design was employed, with primary data collected through structured household interviews from 90 farming households across twelve communities, selected using purposive-cum-random sampling determined by Slovin's formula. Data were analyzed using descriptive statistics, chi-square tests, and independent samples t-tests at $p < 0.05$ significance level. Results revealed that 52.2% of households had adopted at least one practice, but intensity was shallow, averaging 0.62 practices per household. Improved seed varieties dominated adoption at 41.1%, while drip irrigation, rainwater harvesting, sprinkler irrigation, and zero-tillage each recorded 0.0% adoption. Only 36.7% of farmers perceived climate change, with no significant link to adoption behavior alpha ^ 2 = 0.308 = 0.579). Seed type preference was the strongest determinant (x ^ 2 = 49.167. $p < 0.001$) Gender, education, income, farm size, and age showed no statistically

significant associations with adoption. No significant income differential was found between adopters and non-adopters G * chi ^ 2 = 0.625 p = 0.891). Targeted subsidies, strengthened extension outreach, and accessible agricultural credit are essential to scale climate-resilient practice adoption in Nuwakot.

Keywords: Adopter, climate change, extension service, inadequate credit, rainwater harvesting

ECONOMIC ANALYSIS OF CAULIFLOWER (Brassica oleracea var. botrytis) PRODUCTION IN NILKANTIIA MUNICIPALITY, DHADING

Ranjiv Kumar Yadav and Hikmat Kumar Shrestha

The study was conducted from February to April, 2026. The study aimed to analyze the socio-economic characteristics of cauliflower farmers, assess the yield and benefit-cost ratio (BCR) of cauliflower cultivation, and identify the major constraints affecting cauliflower production. Primary data were collected from 94 cauliflower-producing households through a household survey using a semi-structured questionnaire, and the data were analyzed using descriptive and economic analytical tools. The findings revealed that 71.28% of respondents belonged to the economically active age group (35-50 years), 57.45% were male, and 76.59% had either no formal education or only primary education. The average area under cauliflower cultivation was 0.048 ha per household, and 78.9% of farmers cultivated on their own land. Monocropping was practiced by 81.6% of farmers, 52.6% used hybrid seeds, and 65.8% applied both organic and chemical fertilizers. Pipe irrigation was the major irrigation source used by 68.4% of respondents. The average yield of cauliflower was 20,170 kg/ha. The average cost of production was NRs. 453,940/ha, while the average gross return and net return were NRs. 1,326,503/ha and NRs. 873,031/ha, respectively. The benefit-cost ratio was 2.92. The average market distance was 2.11 km, and only 10.5% of farmers had access to storage facilities. The major constraints

identified were high input cost (78.9%), poor quality seed (52.6%), pest and disease problems (36.8%), lack of credit (34.2%), and labor shortage (31.6%). Despite these constraints, 92.1% of farmers considered cauliflower farming profitable and 86.8% were willing to continue its cultivation.

Keywords: Credit access, input cost, profitability, smallholders, yield

ECONOMIC ANALYSIS OF TOMATO UNDER OPEN-FIELD AND PROTECTED CONDITION IN KAVREPALANCHOK DISTRICT, NEPAL

Somap Silwal and Shova Shrestha

Tomato cultivation is an important source of income for smallholder farmers in Nepal. The study compared the economics of tomato production under open-field and protected condition in Kavrepalanchok district, Nepal. A total of 110 farmers were selected through simple random sampling, and 16 soil samples were analyzed to assess soil fertility status. Data were analyzed using descriptive statistics, t-test, Cobb-Douglas production function, and resource use efficiency analysis. The findings revealed that protected cultivation incurred higher production cost (NRs. 32,22,835/ha) than open-field farming (NRs. 17,65,234/ha), but achieved substantially higher yield (1,26,107.6 kg/ha vs 55,405.82 kg/ha). Consequently, protected cultivation recorded higher gross return, net return, and benefit cost ratio (1.73) than open-field farming (1.17). Protected tomato growers also had better access to institutional services, including training, subsidies, and credit facilities, compared to open-field farmers. Seed, farmyard manure, chemical fertilizer, and plant support significantly influenced production under open-field farming, whereas seed, chemical fertilizer, and labor were more influential under protected cultivation. Resource use efficiency analysis indicated inefficient utilization of certain inputs, particularly tillage and plant protection, under both systems. Major production constraints included pest and disease incidence, market price fluctuation,

labor shortage, and water scarcity. Soil analysis revealed slightly acidic conditions along with elevated phosphorus and potassium levels, indicating imbalance in fertilizer application practices that could affect long-term soil productivity. Overall, protected tomato cultivation was found to be economically more profitable and commercially promising than open-field farming in the study area.

Key words: BC ratio, open-field, protected, soil analysis, tomato

PESTICIDES USED IN COMMERCIAL VEGETABLE FARMING IN KIRTIPUR MUNICIPALITY, KATHMANDU

Bhawana Lopchan and Shanta Man Shakya

This study was conducted in Kirtipur Municipality to assess pesticide use practices among commercial vegetable farmers. Altogether randomly selected 100 respondent farmers in the study area were surveyed using a pre-tested semi-structured questionnaire as a guideline. The study mainly focused on identifying major pests and pesticides used in vegetable farming, assessing pesticide use practices, and evaluating farmers' perceptions regarding health and environmental risks associated with the pesticide use. The findings revealed that in vegetable farming plant protection problem, especially the incidence of insect pests as reported 50% respondents and diseases 40% respondents, was the most important problem. Among various means of plant protection, the use of insecticides 53% respondents and fungicides 35% respondents of moderately hazardous level were most common. Ignoring information on pesticide labels (79%) and post application waiting period (63%), and inadequate use of personal protective equipment (58%) were commonly observed. Most respondents were aware of the increment in pest resistance (20%) and soil fertility decline (16%). Farmers commonly experienced health problems such as headache (42%), skin irritation (10%), and dizziness (5%) after pesticide application. The study concludes that there is a need for better training, awareness programs, and promotion of Integrated Pest Management (IPM) to encourage safe

and sustainable pesticide use in commercial vegetable farming and minimize threats to public health.

Keywords: Environmental impact, food safety, health risk, Integrated Pest Management (IPM), Personal Protective Equipment (PPE)

ASSESSMENT OF POST-HARVEST LOSSES OF BANANA IN NAWALPARASI (WEST)

Manisha Shah and Bishnu P. Bhattarai

The study entitled "Assessment Post Harvest Losses of Banana in Nawalparasi (west)" was conducted from February to April 2026 where 100 respondents were selected randomly for primary data and information collection (70 farmers, 10 wholesalers, 10 retailers and 10 street vendors). The objective of the study was to examine the post-harvest losses of banana in Nawalparasi district. 94 percent of farmers produced banana in large scale and harvested them at mature green stage whereas, 49 percent of the farmers sold their fruits in local market. Traditional type of farming, deformed market structure, labor shortage, influence of Indian banana, low price and high transportation cost were identified as major problems for commercial production and marketing. 74 percent of farmers grade their banana basically by size and colour whereas, 28.50 percent used it as cushioning material. Post-harvest losses of banana were observed in different stages of production like 9 percent loss in field during harvesting, 3 percent during packaging, 5 percent during processing and 1 percent during storage stage. In case of wholesalers, 2 percent loss was found during collection, 3 percent during transportation, 4 percent during supply to retailers. At retailers, 3 percent during collection, 2 percent during transportation, 2 percent during storage, 4 percent during retailing. At street vendor's, 2 percent during transportation, 5 percent during unsold product post-harvest losses of banana was carried out. The overall losses of banana in marketing channel from field harvesting to street vendor were found 45 percent.

Key words: Commercial problems, marketing channel, packaging, problems, transportation

COMPARATIVE STUDY OF SELECTED VARIETIES OF CORIANDER (*Coriandrum sativum* L.) FOR LEAF PRODUCTION UNDER POTTED AND HYDROPONICS CONDITIONS

Bipul Nepali and Gopal P. Shrestha

Coriander (Coriandrum sativum L.) is a globally significant spice and vegetable crop characterized by diverse morphological traits and production potentials. This study aimed to evaluate the growth performance of four coriander varieties and compare their productivity in soil-based versus hydroponic cultivation systems. A low-cost hydroponic model was developed using cocopeat, germination trays, and flat trays to assess its efficacy relative to traditional methods. The experiment utilized a Randomized Complete Block Design (RCBD) with seven replications of four varieties: Local, Chinese, Nakkhu Kalami, and Barhamase Kalami. In soil cultivation, 'Nakkhu Kalami' exhibited the highest productivity, yielding 226.30 g per plot with an average plant weight of 18.86 g. Conversely, the 'Local' variety recorded the lowest performance, with a yield of 140.39 g per plot and 11.29 g per plant. While similar trends were observed in the hydroponic system, overall yields across all treatments were significantly lower than those in soil. At 45 days after sowing (DAS), significant variations in plant height were recorded in the hydroponic system, where the 'Local' variety achieved the greatest height (13.16 cm). Overall, plants grown in soil outperformed those in the hydroponic setup regarding plant height, leaf number, and total yield. Based on these findings, 'Nakkhu Kalami' demonstrated the highest potential for yield and profitability in the tested conditions.

Keywords: Hydroponic setup, local variety, Nakkhu Kalami, plant biomass, varietal-trial

VETERINARY AND ANIMAL SCIENCES

DETECTION OF ANTIBODIES AGAINST AFRICAN SWINE FEVER IN PIGS OF DAKSHINKALI MUNICIPALITY, KATHMANDU

Divya Neupane and Madhav Prasad Acharya

African Swine Fever (ASF) is a highly contagious and fatal viral disease of swine caused by the African Swine Fever Virus (ASFV), It is an economically devastating disease, casing immense losses in the pig industry and is a major threat to pig populations worldwide ASF has been spreading across Asia in recent years and was first confirmed in Nepal in March 2022. A cross-sectional study was carried out from July-October 2025 in Dakshinkali Municipality of Kathmandu district. A total of 92 serum samples were collected from pig farms and slaughterhouses and tested for antibodies against ASFV using an indirect Enzyme-linked immunosorbent assay (ELISA). Out of the samples tested, five were positive for ASFV antibodies, yielding an overall seroprevalence of 5.43% The seroprevalence in samples collected from slaughterhouses was significantly higher (33.33%, 2/6) than from farms (3.49%, 3/86; p = 0.0327). A higher antibody prevalence was observed in adult pigs (9.09%, 5/55) compared to younger animals (0%, (037) although the difference between adult and younger pigs was not statistically significant (Fisher's exact test, p = 0.0796). Seroprevalence was higher on farms with poor biosecurity measures, including a lack of foot dips and rodent control, and unhygienic practices like swill feeding. These results confirm the circulation of the pig population of Dakshinkali Municipality. biosecurity, controlled and properly cooked swill feeding practices, and continuous monitoring of pig populations are of utmost importance for effective control and prevention.

Key words: ASF, biosecurity, seroprevalence, slaughterhouse, Nepal

RETROSPECTIVE STUDY ON CLINICAL CASES OF DOGS PRESENTED AT VETERINARY HOSPITAL AND LIVESTOCK SERVICE EXPERT CENTER, LALITPUR

Kabita Neupane and Bala Ram Thapa

This retrospective study was conducted to evaluate and analyze the clinical cases of dogs presented at Veterinary Hospital and Livestock Service Expert Center (VHLSEC), Lalitpur, from November 2024 to June 2025, focusing on canine disease distribution patterns. All the preliminary diagnosis was done by the veterinarians and confirmatory diagnosis were limited. Data for this study were obtained through a retrospective review of clinical records, and descriptive statistical analysis was employed using Microsoft Excel to calculate percentages, and trends in sex-wise and month-wise distributions. A total of 49] cases were recorded during the period, comprising 285 male dogs (58.0%) and 206 female dogs (42.0%). The sex-wise distribution indicates a higher presentation of male dogs, potentially due to behavioral factors such as increased roaming, higher exposure to injuries, and owner preferences for male dogs for companionship. The monthly distribution of cases revealed variations, with the highest number of presentations in November (18.1%) and the lowest in February (9%). Intermediate case numbers were observed in December (11.2%), January (11%), March (11.8%), April (10.6%), May (17.3%), and June (11%), suggesting possible seasonal influences on disease prevalence and clinic attendance. The most frequent clinical cases presented were mainly Surgical Interferences (22%), Digestive Disorders (22%), Skin Diseases (20.2%) and less frequent clinical cases presented were General Systemic Signs (10.2%), Respiratory Disorders (6.5%), Viral Diseases (4.5%), Bacterial Diseases (2%). Ocular Diseases (1.2%), Neurological Disorders (0.2%), and others (2.4%). The findings provide significant epidemiological insights into canine health patterns in the Lalitpur region. offering guidance for veterinary planning targeted preventive interventions. vaccination campaigns, and efficient allocation of clinical resources.

Keywords: Clinical cases, sex-wise distribution, month-wise distribution, veterinary epidemiology, Nepal

HAEMATOLOGICAL ALTERATIONS IN DOGS WITH SKIN DISORDERS

Sonu Shrestha and Raju Shrestha

As valued companions, dogs' health reflects their well-being, and skin disorders, being common, can influence systemic health. Complete blood counts (CBCs) provide insight into the body's response to inflammation, infection, and parasites. This prospective clinical observational study, conducted over five months at three veterinary centers in Nepal, included 50 dogs of varying breeds, ages, and sexes with visible skin problems, including alopecia, dermatitis, pruritus, and scaling; dogs with other systemic illnesses or on immunosuppressive therapy were excluded. Blood samples were collected in EDTA tubes and analysed manually for RBC, Hb, PCV, MCV, MCH, MCHC, WBC, differential leukocyte counts, and platelets. Data were analysed using descriptive statistics, Kruskal–Wallis, and Mann–Whitney U tests ($p < 0.05$) in excel. Higher incidences were male and local breeds, with ectoparasitic causes accounting for 28% of cases. Significant differences in lymphocyte and eosinophil counts, RBC, Hb, and PCV were observed among different aetiologias, while breed influenced RBC and PCV; age and sex had minimal impact. These findings indicate that skin disorders can elicit measurable systemic responses, and even subtle hematological changes can aid veterinarians in diagnosis, monitoring, and management.

Keywords: Canine dermatology, hematology, skin disorders, complete blood count, Kruskal–Wallis Test, Mann–Whitney U Test

ASSESSMENT OF BIOSECURITY PRACTICES AND ANTIMICROBIAL USE IN COMMERCIAL POULTRY FARMS OF CHANGUNARAYAN MUNICIPALITY, BHAKTAPUR, NEPAL

Kshitiz Sharma and Sanam Maharjan

Given the heightened vulnerability of poultry to infectious disease outbreaks, the adoption of robust and comprehensive biosecurity practices is critical for preventing the introduction and spread of harmful biological agents within poultry farms. Equally. the judicious use of antimicrobials is imperative, as their misuse accelerates antimicrobial resistance, posing significant risks to poultry production, public health, and the broader One Health ecosystem. This study assessed biosecurity practices and antimicrobial use in 45 commercial poultry farms of Changunarayan Municipality, Bhaktapur, Nepal, using structured questionnaires and quantitative statistical analysis. The mean age of participating farmers was 40.2±8.93 years, while the median flock size was 750 birds, reflecting a predominantly small- to medium-scale poultry sector in the study area. A structured questionnaire evaluated structural, conceptual, and operational biosecurity, along with antibiotic use and awareness of antimicrobial resistance (AMR) Structural biosecurity was weak only 13.33% (n=6) of farms had footbaths, 71.1% (n = 32) had secured fencing, and just 8.9% (n = 4) displayed signage boards. While 82.2% (n = 37) practiced proper feed storage and 77.8% (n=35) had disposal systems for dead birds, as many as 84.4% (n = 38) relied on surface water. Conceptual compliance was poor, with only 11.1% (n=5) following a biosecurity plan and 17.8% (n = 8) having received training, although 82.2% (n = 37) believed biosecurity prevents disease. Operational measures showed mixed results: 93.3% (n = 42) practiced all-in-all-out management and 91.1% (n = 1) followed vaccination schedules, yet only 42.2% (n = 19) refreshed footbaths regularly and 66.7% (n = 30) failed to manage waste properly. Antibiotic use was widespread, with 84.4% (n = 38) of farms administering them, mostly during outbreaks (44.4%, n = 20). while only 24.4% (n=11) used

them on veterinary advice. Awareness of withdrawal periods (24.4%, n = 11) and AMR (33.3%, n = 15) was low, though 86.7% were willing to adopt antibiotic-free farming with stronger biosecurity. Upon conducting a comprehensive statistical analysis of the data generated from the study, overall awareness of antimicrobial resistance (AMR) was moderate, statistical assessments revealed no significant association between AMR knowledge and key socio-demographic variables including gender (p = 0.282 , OR = 2.5 95% CI: 0.454-13.76), previous biosecurity training (p = 0.463 , OR = 1.59 95% CI: 0.459-5.50), and years of farming experience fp = 0.259 OR = 2.08 95% CI: 0.578-7:49), Importantly, a strong and statistically significant association was observed between AMR knowledge and adherence to drug withdrawal periods (p 0.0001; OR = 4.36 95% CI: 0,477-39.89). The study highlights major gaps in conceptual and operational biosecurity, coupled with high but poorly regulated antibiotic use. Strengthening farmer training, enforcing standards, adhering strongly to biosecurity measures and promoting alternatives to antibiotics are crucial for sustainable poultry production and public health protection in Nepal. (n = 39)

Keywords: Antimicrobial resistance (AMR), Antimicrobials, biosecurity measures, Changunarayan Municipality, disease outbreaks.

SEROPREVALENCE OF LEPTOSPIROSIS IN CATTLE OF GORKHA DISTRICT, NEPAL

Prativa Shrestha and Indira Sharma

Leptospirosis is a globally significant zoonotic disease caused by pathogenic spirochetes of the genus Leptospira, affecting both livestock and humans. In cattle Leptospira Interorgan serovar Hardjo is a major causative agent, leading to reproductive losses and economic impacts. In Nepal, Information on the prevalence of Leptospirosis in cattle is limited, particularly in hilly regions such as Gorkha district. This cross-sectional study aimed to determine the seroprevalence of Leptospirosis in cattle of Gorkha district and assess associations with risk factors including

location, breed, age, and parity A total of 92 serum samples from cattle in Gorkha and Palungtar Municipalities were analyzed using the Leptospira Hardjo IgG ELISA Test Kit (Blopanda Reagents, UK). Data were analyzed using Microsoft Excel, and statistical associations were evaluated by using Chi-square test. The overall seroprevalence was 2.17% (2/92). The findings indicated a low endemic presence of Leptospira Hardjo in cattle of Gorkha district, with no significant differences across location, breed, age, or parity. This study provides an initial assessment of Leptospira Hardjo infection among cattle in Gorkha district, underscoring its potential contribution to reproductive and zoonotic risks, and emphasizing the need for routine surveillance and improved herd management practices to reduce leptospiral burden. enhance cattle productivity, and protect public health.

Keywords: Cattle, Gorkha, *Leptospira Hardjo*, risk factor, seroprevalence

STUDY ON SEROPREVALENCE OF CONTAGIOUS CAPRINE PLEUROPNEUMONIA (CCPP) DISEASE IN GOATS OF RASUWA, KATHMANDU, AND CHITWAN DISTRICTS, NEPAL

Sijan Timilsina and Sabina Lamsal

Contagious caprine pleuropneumonia (CCPP) is a highly contagious respiratory disease of goats caused by Mycoplasma capricolum subsp. capripneumoniae, a pleomorphic, cell wall-deficient, gram-negative-like, facultative anaerobic bacterium. It is a severe respiratory disease of goats characterized by high morbidity and mortality, as well as the potential to spread across borders. A study was conducted during June to October 2025 to determine the seroprevalence of CCPP in goats from Rasuwa, Kathmandu, and Chitwan districts of Nepal. A total of 168 goal serum samples, with 56 samples collected from each district, were collected and tested using competitive enzyme-linked immunosorbent assay (CELISA) (IDEXX CCPP Ab Test Kit, United States) to detect

antibodies against Mycoplasma capricolum subsp. capripneumoniae. Out of the 168 samples tested, 4 (2.38%) were seropositive for CCPP. District-wise results showed that Rasuwa had 2 positive samples out of 56 (2/56 =3.57%), Kathmandu also had 2 positive samples out of 56 (2/56 = 3.57%), while all samples from Chitwan were negative. This study confirms the presence of CCPP in the goat population of Nepal and indicates possible circulation of the pathogen within the country. Therefore, appropriate preventive measures such as regular surveillance, continued research and investigation, and strengthened regulatory policies on transboundary animal movements should be implemented to prevent potential disease outbreak.

Keywords: Caprine, CCPP, ELISA, mycoplasma

DOSE RESPONSE EFFICACY OF ALBENDAZOLE IN KHARI-CROSS GOAT IN CHANDRAGIRI MUNICIPALITY, KATHMANDU

Pallabi Kunwar and Krishna Bahadur Shrestha

The fecal egg count reduction test (FECRT) was used to determine the dose-dependent efficacy of Albendazole against gastrointestinal nematodes (GIN) in Khari-cross goats from Chandragiri, Kathmandu. A total of 45 naturally infected goats were randomly assigned to three treatment groups (5 mg/kg, 10 mg/kg, and 15 mg/kg), with 15 goats each. Fecal samples were collected per rectum before and after treatment (Days 0-14) and analyzed using the McMaster technique in accordance with the Hansen, J., and Perry, B. (1994) protocol. The mean egg per gram (EPG) on day 0 was highest in the 10 mg/kg group and lowest in the 15 mg/kg group. Post-treatment results revealed dose-dependent reductions in fecal egg counts, with fecal egg count reduction (FECR) values of 79.38% (5 mg/kg), 91.73% (10 mg/kg), and 98.03% (15 mg/kg). All doses reduced egg shedding, but only 15 mg/kg met the World Association for the Advancement of Veterinary Parasitology's (WAAVP) >95% efficacy threshold. The findings suggest suboptimal

performance of Albendazole at conventional doses in goats under Nepalese field conditions, possibly due to rapid drug metabolism in goats, reinfection pressure, underdosing, or emerging anthelmintic resistance. This study highlights the need for revised dosing guidelines, improved parasite management, and further resistance-focused research in Nepal.

Keywords: Albendazole, anthelmintic resistance, gastrointestinal nematodes, goat, Nepal

DETECTION OF *Coxiella burnetii* (Q FEVER) ANTIBODIES IN GOAT ENTERING KATHMANDU VALLEY THROUGH THE NAGDHUNGA CHECKPOST

Rita Thapa and Subash Poudel

Q fever, caused by Coxiella burnetii, an obligate gram-negative intracellular rickettsia, leads to reproductive issues such as abortion, stillbirth, premature delivery, and weak offspring, severely impacting the livestock economy. A cross-sectional study was carried out during July to September 2025 to detect antibodies against C. burnetii in goats from Nagdhunga Check post, Kathmandu. A total of 92 goat serum samples were collected and Indirect ELISA was used to detect antibodies against Coxiella burnetii. Out of the 92 goat serum samples collected, 25 originated from Dhading, 22 from Bardiya, 18 from Gorkha, 11 from Kailali, 9 from Surkhet, and 6 from Kapilvastu. The overall seroprevalence of C. burnetii was 9.77% (9/92). Among these, 7 samples (7.60%) showed strong positivity including 5 from Dhading and 2 from Kapilvastu, while 2 samples (2.16%) were classified as positive with one each from Bardiya and Gorkha, whereas the remaining 83 samples tested negative. As Nagdhunga check post is the major entry point of the goats for Kathmandu valley, the findings indicates a potential C. burnetii exposure risk to both humans and animals highlighting the need for early detection and preventive measures to minimize economic and public health impacts.

Keywords: *Coxiella burnetii*, ELISA, goats, Nepal

DETECTION OF ANTIBODIES AGAINST Brucella SPECIES IN GOATS MARKETED AT THE KALANKI LIVE GOAT MARKET, KATHMANDU

Sudarshan Poudel and Poornima Manandhar

Brucellosis is an important zoonotic disease globally that causes substantial economic lasses to livestock owners and poses a significant public health threat. Detecting its presence in goats is essential for assessing potential transmission risks und for understanding the economic burden on farmers. This study aims to detect the antibodies against Brucella spp in goats. A cross-sectional study was performed during mid-September and early October 2025 to detect Brucellosis in serum samples of Goats (Khari, Khari cross and Boer) marketed at the live Goat market, Kalanki, Kathmandu using an Indirect ELISA. Out of 92 samples tested, 5.4% (5/92) samples were found to be seropositive for antibodies against Brucella spp. The seropositivity was found higher in Khari goats 6.7% (4/60) compared to Khari cross goats 4.5% (1/22), while all goats of Boer breeds 0% (0/10) were found to be negative. There was no significant association between goat breed and seropositivity ($p>0.05$), suggesting that observed variations may be due to random chance rather than a true breed effect. The results and finding of this study highlight the need for intensified surveillance, mandatory testing in live animal markets, and public health awareness programs to mitigate the risk of brucellosis transmission in Nepal.

Keywords: Antibodies, brucellosis, ELISA, zoonotic

EVALUATION OF RENAL FUNCTION TESTS IN STRAY DOGS OF KATHAMNDU DISTRICT

Shriyana Dhungana and Raju Shrestha

This study was conducted to evaluate kidney function in stray dogs of Kathmandu district using blood urea, blood urea nitrogen (BUN) and serum creatinine levels. A total of 50 stray dogs were sampled from Kathmandu Animal Treatment Centre (KAT) and Animal Nepal he tween dogs aged 1 to 12 years. Blood samples were collected and analyzed using standard biochemical methods. Descriptive statistics and BUN: creatinine ratios were calculated to assess renal status. The mean serum creatinine level was 0.99 mg/dl, and the mean urea level was 50.53 mg/dL. Most dogs (14%) had creatinine values within the normal range, while only 6% showed high creatinine. In contrast, a large number of dogs (72%) had increased urea levels. The BUN: creatinine ratio was high in 64% of the dogs. Age-and sex-wise analysis showed no major differences in kidney markers among different groups. The findings suggest that most stray dogs had normal kidney filtration based on creatinine, but marry showed high urea and high BUN: creatinine ratio. This pattern indicates that pre-renal causes such as dehydration, poor nutrition, and stress are more likely than true kidney disease. The study highlights the importance of combining complete renal function tests that Includes blood urea nitrogen, serum creatinine, SDMA, serum electrolytes (Na, K. Cl), phosphorus, calcium, urinalysis with urine specific gravity, urine protein estimation and urine protein-creatinine ratio and clinical examination for accurate evaluation of kidney health in stray dogs.

Keywords: Blood urea nitrogen (BUN), renal function, serum creatinine, stray dogs, urea

DETECTION OF BETA-LACTAM ANTIBIOTIC RESIDUE IN MILK SAMPLES AND ASSESSMENT OF KNOWLEDGE, ATTITUDE, PRACTICE REGARDING ANTIBIOTIC USE AMONG DAIRY FARMERS IN KATHMANDU VALLEY

Bibhuti Bam and Naba raj Shrestha

Antibiotic residues in milk continue to pose a significant public health concern due to their role in the development and dissemination of antimicrobial resistance, leading to treatment failures and the emergence of resistant infections. This study aimed to detect Beta-lactam antibiotic residues in raw milk and to assess the Knowledge. Attitude. Practice (KAP) regarding antibiotic use among dairy farmers in Kathmandu. A cross-sectional study was conducted in Kathmandu Valley from July to August 2025 to detect Beta-lactam antibiotic residues in raw milk and assess the KAP of dairy farmers. A total of 82 raw milk samples were collected from milk collection centers and individual farms and analyzed using the competitive Enzyme-Linked Immunosorbent Assay at the Central Veterinary Laboratory, Tripureshwor. Detected residue levels were compared with Nepal's Maximum Residue Limit of 4 µg/kg. Simultaneously, structured, pre-tested questionnaires were administered to 60 dairy farmers regarding antibiotic use. Out of the 82 milk samples analyzed, Beta-lactam antibiotic residues were detected in 12.19% (n=10). Among these 10 positive samples, 10% (n=1) contained residue level exceeding the MRL. The KAP assessment revealed that most of the farmers were male (76.7%). About 41.67% of the farmers belong to the 29-43 age range. Antibiotic use in animals was well-known, with 88.3% of respondents saying they had heard of it. Every farmer acknowledged the need for training on ethical antibiotic usage and said they do not use antibiotics without a veterinarian's prescription. In terms of practice. 75% discarded milk from antibiotic-treated animals, and 71.7% had never performed an antibiotic sensitivity test (AST). These results highlight the need for enhanced monitoring and stronger regulatory measures to safeguard milk quality and consumer health, while also underscoring the importance of targeted educational and training

interventions to minimize irrational antimicrobial use and reduce the risk of antimicrobial resistance. Furthermore, broader studies across multiple regions and production systems are recommended to better understand the risks associated with antibiotic use in dairy production.

Keywords: Antibiotic residue, antimicrobial resistance, beta-lactam, ELISA, MRL

PREVALENCE OF GASTROINTESTINAL NEMATODES IN GOATS OF KIRTIPUR MUNICIPALITY, KATHMANDU

Manita Chaudhary and Krishna Bahadur Shrestha

The study on the gastrointestinal nematodes in goats of Kirtipur municipality of Kathmandu district was conducted during June to November 2025. The samples were examined at HICAST laboratory and central veterinary laboratory. A total of 200 samples were collected, transported and examine by employing flotation and sedimentation method. Out of 200 samples examine 154(77%) samples were found to be positive for nematodes and 46(23%) samples were found to be negative. Out of total positive sample 6(3%) positive for Trichuris species and 148(74%) positive for Strongyle species ova. In age wise, the occurrence was higher (76%) 76 out of 100 in 1 year age group followed by 0 to 1 year age group(44%) 44 out of 100. Breed wise, the occurrence was higher in Jamunapari(76%) 36 out of 50 followed by Terai x Jamunapari(64%) 32 out of 50, Barbari(60%) 30 out of 50 and Terai(44%) 22 out of 50. It is concluded that the breed wise occurrence was found to be more in Jamunapari as compare to other, age group above 1 year were found to be more prone to Gl nematodes.

Keywords: Breed, Central Referral Veterinary Hospital, Jamunapari, Kirtipur

EFFECTS OF GINGER LIQUID EXTRACT AS DIETARY SUPPLEMENTATION ON GROWTH PERFORMANCE IN COMMERCIAL BROILER CHICKENS

Sunil Upreti and Sunil Sapkota

The aim of the study was to assess the effect of dietary supplementation of ginger (Zingiber officinale) extract on performance of Broilers chicken. Ginger's natural gingerols, shogaols, and zingerone provide antioxidant, antimicrobial, and digestive benefits, potentially boosting growth. The trial ran for 42 days (14 June-25 August 2025) at HICAST, Kirtipur, Nepal, using day-old Broilers and composed of four experimental groups (35 birds each) TO (0%), TI (0.5%), T2 (1%), and T3 (1.5%) ginger extract in water. Birds received starter, grower, and finisher rations in three 14-day phases with ad libitum feeding. Feed intake was recorded daily; body weights were measured weekly. T3 achieved the highest ($p<0.05$) final weight (2115.71 g) and T2 achieved best feed conversion ratio (1.59), outperforming other treatments. Results indicated 1% ginger liquid extract improves growth efficiency and may be a valuable natural additive for commercial poultry production.

Keywords: Cobb 500, FCR, feed intake, ginger, weight gain

STUDY OF COCCIDIOSIS IN COMMERCIAL BROILERS AT DHUNIBESI MUNICIPALITY, DHADING DISTRICT

Rojina Khadka and Rupendra Chaulagain

Coccidiosis is one of the most significant diseases affecting commercial poultry farms worldwide caused by Eimeria spp. protozoan parasites, which damage the intestinal lining of poultry, leading to poor feed conversion, weight loss, reduced egg production, and high mortality rates. This study was carried out during September 2025 το November 2025 in Dhunibeshi Municipality of Dhading District, Bagmati Province

with the objective of determining the prevalence of poultry coccidiosis in relation to age and farm-level biosecurity. A total of 100 faecal samples of different age group were collected by random sampling method and kept in zip lock bags by labelling clearly according to age and biosecurity level. Samples were examined by centrifugal flotation techniques and oocysts were observed under microscope 10X and 40X Laboratory examination was carried out at HICAST. Kirtipur and Central Veterinary Laboratory. Tripureshwor. The overall prevalence of coccidiosis was found to be 14%. Age-wise analysis showed that 3-6-week broilers had a higher prevalence (20%) compared to 0-3-week birds (8%). Biosecurity assessment revealed that farms with poor biosecurity had the highest prevalence (25%), followed by moderate biosecurity farms (15.4%), while farms with good biosecurity showed the lowest prevalence (8%). These findings indicate that coccidiosis were present at a moderate level in commercial broiler farms of Dhunibeshi, with age and biosecurity practices playing significant roles in disease occurrence.

Keywords: Age-wise, biosecurity, coccidiosis, commercial broilers farm, *Eimeria* spp.

STUDY OF BABESIOSIS IN CANINE OF KATHMANDU VALLEY

Bimochan Raj Khadka and Sajana Thapa

Canine babesiosis is an important tick-borne Haemoprotozoan disease of dogs caused by Babesia species and is widely prevalent in tropical regions. This study was conducted to determine the prevalence of canine babesiosis in Kathmandu Valley during August-November 2025. A total of 100 blood samples were examined using Giemsa-stained thin blood smears. A total of eight dogs were found positive. Higher occurrence was observed in female dogs (11.11%) followed by stray dogs (10%) and then tick-infested dogs (8.33%). The highest age-wise proportion of infection was recorded in the 6-9 years age group (10.34%). However,

statistical analysis revealed that the associations between infection status and the studied risk factors were not statistically significant ($p>0.05$). The study indicates a moderate prevalence of canine babesiosis in Kathmandu Valley and provides baseline epidemiological data for future research.

Keywords: Babesia, Canine babesiosis, Giemsa stain, Kathmandu valley, occurrence

DEMONSTRATION OF ANTIBODIES AGAINST BOVINE VIRAL DIARRHEA VIRUS (BVDV) IN DAIRY CATTLE OF BARDIYA, NEPAL

Sarishma Shrestha Vijay Chandra Jha

Bovine Viral Diarrhea (BVD) is a globally recognized disease caused by pestivirus. BVD is a major cause of reproductive failure and economic loss in dairy herds, often manifested as infertility, repeat breeding, and abortions. Despite the prevalence of reproductive problems in Nepalese dairy cattle, the role of BVDV in the Bardiya district had not been documented before. This cross-sectional study was conducted to demonstrate antibodies against BVDV and associated risk factors in dairy cattle presented with a history of infertility, Le., repeat breeding and anestrus, in Bardiya, Nepal. Ninety-two (92) serum samples collected from affected cattle presented with a history of infertility were tested for antibodies against BVDV using the ID Screen® BVDV p80 Antibody Competition ELISA. A total of 14 serum samples (15.22%) were found positive confirming moderate BVDV exposure among the high-risk populations of infertile cattle. No significant associations were detected with factors such a breed, parity, BCS, or specific reproductive symptoms like repeat breeding or anestrus. The findings of this study indicate a comparatively higher seroprevalence rate than previous studies conducted in Nepal. This study provides a baseline prevalence of BVDV infection among infertile cattle in Bardiya, highlighting the potential role of this virus as one of the causes of reproductive problems

and the need for targeted surveillance and integrated herd health management to reduce the burden of BVDV infection for improved dairy productivity.

Keywords: Bovine viral diarrhea virus (BVDV), dairy cattle, infertility, seroprevalence, risk factors

A CROSS-SECTIONAL STUDY ON PREVALENCE OF BRUCELLOSIS IN CATTLE OF KATHMANDU VALLEY USING MILK RING TEST AND INDIRECT-ELISA

Rujita Chaudhary and Aabhash Pandey

A cross-sectional study was conducted to assess the prevalence of brucellosis in dairy cattle with reproductive disorders in Kathmandu Valley, Nepal during a period from April, 2025 to July, 2025. A total of 117 raw milk samples (45 Kathmandu, 35 Lalitpur and 37 Bhaktapur) were tested using Milk Ring Test (MRT) and Indirect ELISA (i-ELISA) for the detection of Brucella antibodies. MS Excel 2016 and IBM SPSS version 26 (2019) were used for the data analysis. The overall prevalence was 7.69% and 8.55% by i-ELISA and MRT respectively. Location-wise, Bhaktapur showed the higher prevalence of 10.81% (OR:1.92; 95% CI, p = 0.298) by i-ELISA, followed by Kathmandu 8.89% and Lalitpur 2.86% whereas Kathmandu showed the higher prevalence of 15.56% (OR:1.14: 95% CI, p = 0.859) by MRT, followed by Bhaktapur 5.41% and Lalitpur 2.86%. Reproductive disorder-wise, cattle with mixed infections showed the higher prevalence of 21% (OR:1,51: 95% CI, p = 0.126) and 29% (OR:1.5. 95%Cl. p = 0.167) by i-ELISA and MRT, respectively. Chi-square and Fisher's Exact tests indicated no statistically significant association (p > 0.05) between brucellosis prevalence and breed, age, parity, breeding method, location, or reproductive disorders. Fisher's Exact Test was used as the more robust measure of association which revealed a statistically significant association between the test results (95% CI, p = 0.029) indicating a significant association between the results of the two diagnostic tests.

Brucella infection in cattle may be attributed to poor biosecurity practices or lack of disease screening. These findings highlight the zoonotic implications of Brucella infection and reinforce the importance of early detection, preventive measures, and strengthened surveillance. To accurately determine the true burden of disease in the Kathmandu Valley, further studies with larger sample sizes are required.

Keywords: Brucellosis, indirect ELISA (i-ELISA), Kathmandu Valley, milk ring test (MRT), reproductive disorder

PREVELANCE OF Paramphistomum spp. IN CATTLE OF BANEPA MUNICIPALITY OF KAVRE DISTRICT, NEPAL

Sunita Ojha and Bhubaneshwar Sharma

Paramphistomum Spp are one of the most commonly described serious gastrointestinal parasitic infections distributed worldwide. Immature Paramphistomum causes pathological changes in the mucosa resulting in necrosis, hemorrhages, and inflammatory changes in the intestines of ruminants. The study was designed to determine the prevalence of Paramphistomum Spp in cattle of Banepa Municipality. Kavre district, Nepal. The cross-sectional study was carried out during September to December 2025. A total of 329 purposive samples were collected and examined using sedimentation methods. Among 329 samples, 93 (28.27%) were found to be positive for Paramphistomum. The prevalence association with sex, breed, age, deworming status, and feeding system was analyzed using at 5% significance. The study revealed that sex-wise prevalence was higher in males (37.83%) compared to females (27.05%). The prevalence with respect to breed, deworming status, and feeding system were found significant ($p \leq 0.05$) whereas, prevalence due to age and sex was found non-significant ($p > 0.05$). The result revealed an overall high prevalence of Paramphistomum in cattle of Banepa municipality, Kavre district.

Keywords: Breed, deworming, necrosis, sedimentation

EPIDEMIOLOGICAL ASSESSMENT OF DETERMINANTS AND RISK FACTORS OF LUMPY SKIN DISEASE IN CATTLE OF LALITPUR DISTRICT, NEPAL

Bijeta Khatri and Krishna Bahadur Shrestha

This study was conducted during October 2 to December 10, 2025 which assessed determinants and risk factors of Lumpy Skin Disease (LSD) in 100 cattle herds of Lalitpur District, Nepal (60 herds from Mahalaxmi and 40 from Godawari municipalities). Herd sizes were predominantly crossbred (86%) and 10% introduced new animals in the last five years. Housing systems were either semi-intensive (57%) or intensive (43%). Most farms practiced stall-feeding (73%), carried out daily cleaning, while 56% had proper manure and water disposal practice. Biosecurity practices (21%) were low and quarantine (7%) was rarely followed. Vaccination coverage was 85% and 81% believed vaccination prevents LSD. However, 62% had heard about LSD and 40% understood its transmission pattern. Reporting to veterinary authorities when suspected was practiced in 25% of herd. Vector load varied among low (72%), medium (18%) and high (10%) with 90% implementing vector control practice. LSD occurred in 51% of herds (1.46 ±1.79 cases/herd) having mortality with mean of 0.3±0.58. Crossbred status (AOR 2.85), new animal introduction (AOR = 2.92) and high vector load (AOR 3.85) were key risk factors whereas vaccination (AOR = 0.48) and knowledge (AOR = 0.52) were protective. Findings highlight host susceptibility, herd movement, vector ecology, farm management, and farmer KAP as determinants of LSD, emphasizing strengthened biosecurity, vaccination, vector control and education to reduce as well as to mitigate future outbreaks of LSD.

Keywords: Biosecurity, dairy cattle, lumpy skin disease, vaccination.

PREVALENCE OF Strongyles spp. IN GOATS OF GHORAHI MUNICIPALITY, DANG

Renu Agri and Naresh Shah

Gastrointestinal parasitism remains a major health challenge in small ruminant production, particularly under traditional household farming systems. The present study was conducted during October to November 2025 in order to determine the prevalence of Strongyles spp. infection in goats raised under household farming conditions in Ghorahi Municipality, Dang, Nepal. A total of 120 goats from different age groups and both sexes were selected for this study. Fresh fecal samples were collected either per-rectally or from freshly voided droppings and transported to the Livestock Service Laboratory, Ghorahi Municipality. Samples were examined using the sedimentation technique. Of the total of 120 samples, 35 (29.1%) were positive for Strongyles spp. The rate in females was higher than that in males. Regarding age, the highest number of samples were positive in goats of below 1 year (35.7%, 15) and 2-3 years (34.6%,9) followed by 1-2 years (23.5%, 8) and least in samples of 3 years of age (16.67%,3), Non-dewormed goats had a significantly higher prevalence rate at 53.8%, as compared to dewormed goats at 10.3%, hence the need for periodic anthelmintic therapy. Factors such as poor hygiene, the use of irregular deworming schedules, suboptimal nutrition, and weak biosecurity practices may be responsible for the infection. Overall, the findings highlight the importance of improving management practices, periodic deworming programs, and raising awareness among goat farmers to reduce the impact of gastrointestinal parasites.

Keywords: Deworming, farmers, livestock, parasites,

STUDY OF Q FEVER (*Coxiella burnetii*) AND ASSOCIATED RISK FACTORS IN DAIRY CATTLE OF BARDIYA DISTRICT, NEPAL

Renisha Manandhar and Meera Prajapati

Coxiella burnetii is an obligatory intracellular gram-negative bacterium that causes Q fever, a zoonosis. Numerous animal species have been shown to be infected with *C burnetii*; however ruminants are the primary reservoirs and human infection sources. Although *C. burnetii* infections in ruminants are frequently asymptomatic, they have also been linked to infertility and abortions. Using an indirect ELISA from the ID Screen® Q Fever Indirect Multi-species ELISA kit from Innovative Diagnostics (ID) Vet, France, 92 sera samples from cows with a history of infertility were examined for the presence of antibodies against *C. burnetii*. It was found that 3 (3.26%) of cattle in the Bardiya district had Q fever (*Coxiella burnetii*). The risk factors linked to *C. burnetii* were analyzed using the chi-square test and odds ratio. There was no statistical significance between the risk factors(breed, parity, husbandry practices, and BCS) while there was significant association between history of abortion (p=0.030). With the first time, this study found that cattle in Nepal's Bardiya district were seropositive with Coxiellosis. To validate the results and evaluate the public health risk, enhanced surveillance utilizing confirmatory methodologies with an adequate sample size is necessary

Keywords: Bardiya, *Coxiella burnetii,* ELISA, Q fever, seroprevalence

ISOLATION OF *Aspergillus* spp. IN LUNGS OF POULTRY BROUGHT AT CENTRAL VETERINARY LABORATORY

Paritosh Thapa and Rupendra Chaulagain

Aspergillosis is an important respiratory disease of poultry caused by fungi of the genus Aspergillus, commonly linked with contaminated litter, feed, and poor ventilation. Despite its significance, fungal infections in poultry remain underdiagnosed in Nepal. This study aimed

to determine the prevalence of Aspergillus spp. in lung samples of diseased poultry submitted to the Central Veterinary Laboratory (CVL), Kathmandu. A total of 50 lung samples were cultured on Sabouraud Dextrose Agar (SDA), and microscopic examination using Lactophenol Cotton Blue (LPCB) confirmed Aspergillus spp. in 9 samples, indicating a prevalence of 18%. Although 41 additional samples showed colony morphology suggestive of Aspergillus, they were not confirmed microscopically. Statistical analysis revealed a significant association between sample categories and Aspergillus positivity (p=0.006). indicating that lower categories had proportionally more positive cases. The prevalence found in this study is lower than some reports from Bangladesh and India but still reflects a moderate and epidemiologically relevant level of infection in Nepalese poultry. These findings highlight the need for improved fungal surveillance and better farm management practices to reduce the impact of aspergillosis in poultry production systems in Nepal.

Keywords: *Aspergillus* spp., poultry, lungs, fungal isolation, SDA culture

A COMPARATIVE STUDY ON THE PREVALENCE OF ZOONOTIC GASTROINTESTINAL PARASITES IN PET AND STRAY DOGS OF KATHMANDU VALLEY

Samriddhi Khadka and Maheshwar Dahal

Zoonotic parasites, poses significant public health risks in urban areas where close interactions between humans and dogs are prevalent. This study was aimed to investigate the prevalence of various zoonule gastrointestinal parasites in pets and stray dogs of Kathmandu valley through a cross sectional survey from July to October 2025. A total of 100 samples were collected from dogs at the Central Referral Veterinary Hospital and Animal Nepal. Freshly voided feces were collected in zip-lock bags, preserved in ice, and transported to the Central Veterinary Lab for analysis using a standard sedimentation and floatation technique

(Council, C.A.P., 2022). Out of 100 dogs fecal samples examined, 28 (28%) were positive for presence of at least one of the zoonotic helminth. The prevalence of helminth parasites was significantly higher in stray dogs (42%) than in pet dogs (14%). The common parasites observed in present study were Ancylostoma spp. (46.4%). Toxocara spp (39.2%), and Trichuris spp (14.2%). The age wise findings revealed the highest number of positive samples in 20 (30.3%) dogs aged 1-3 years old followed by 4 (21.05%) dogs aged 3-8 years old and 3 (20%) dogs aged more than 8 years. The prevalence of zoonotic helminth parasites was significantly greater in male pet dogs (20.68%) than in female pet dogs (4.76%) and in stray dogs prevalence was 40.74% in male dogs and 43.4% in female dogs. The prevalence was high in crossbred dogs (42.85%) than in purebred dogs (9.09%). Significantly higher prevalence of gastrointestinal zoonotic helminthes was found in non-dewormed dogs (44.06%) than in dewormed dogs (4.8%). These findings underscore the importance of regular deworming and improved hygiene practices, to mitigate the risk of transmission of zoonotic gastrointestinal helminths in Kathmandu Valley.

Keywords: Ancylostoma spp., deworming, *Toxocara* spp, *Trichuris* spp

KNOWLEDGE, ATTITUDES AND PRACTICES ON ANTIMICROBIAL USE AND RESISTANCE IN POULTRY FARMS OF KATHMANDU VALLEY, NEPAL

Shristi Khatiwada and Cheeranjivi Pantha

A cross-sectional survey was conducted from August to October 2025 (Bhadra-Kartik 2082) among 110 commercial poultry farmers in Kathmandu Valley, Nepal, to assess their knowledge, attitudes, and practices (KAP) regarding antimicrobial use (AMU) and antimicrobial resistance (AMR), and the bio-security status of their farms. Results revealed critically low awareness of AMR: only 9/110 (8.2%) of farmers had ever heard the term "antimicrobial resistance," and just 51/110 (46.4%) were aware of its implications for human health. Antibiotics

were used by 93/110 (84.5%) of respondents, primarily doxycycline 88/110(80%), tilmicosin 45/110 (41%), and tylosin 28/110 (25%). for both therapeutic 63/110 (57.3%) and prophylactic/growth-promotion purposes 47/110 (42.7%). Only 54/110 (49.1%) could correctly identify the antibiotics they used, 50/110 (45.5%) observed withdrawal periods, and 56/110 (50.9%) maintained treatment records. Despite poor knowledge, attitudes were largely positive: 108/110 (98.2%) agreed that veterinary consultation before antibiotic use is important, 100/110 (90.9%) believed good hygiene reduces AMR, and 81/110 (73.6%) acknowledged that overuse of antibiotics in poultry can cause AMR. These findings highlight an urgent need for targeted farmer education, strengthened veterinary extension services, improved access to diagnostic tools, and stricter enforcement of regulations on antimicrobial sales and use to curb the growing threat of AMR in Nepal's poultry sector and protect public health.

Keywords: Antibiotics, biosecurity, cross-sectional study, poultry industry, questionnaire

ASSESSMENT OF BACTERIAL LOAD, ISOLATION AND IDENTIFICATION OF Salmonella spp. IN RAW MILK OF CATTLE FROM KIRTIPUR MUNICIPALITY

Sagar Pokhrel and Shikha Rimal

A study was conducted in the Kirtipur Municipality of Kathmandu Valley during November to December 2025 to evaluate the bacterial load in the raw milk of cattle and to isolate Salmonella spp bacteria. A total of 50 milk samples from different cattle farms rearing at least 3 castles were collected in a sterile container directly from the udder by hand milking. These samples were subjected to a total plate count using the pour plate method Furthermore, isolation and identification of Salmonella were performed using selective media and biochemical tests. The mean total plate count (TPC) of raw milk was found to be 2.7 x 10' cfu/ml, whereas 4 out of the 50 samples tested positive for the presence

of Salmonella spp. The mean TPC value of the raw milk samples exceeded the standard guideline provided by the FDA. However, among the 50 raw milk samples, 34 milk samples were of very good quality, 1 of good, 5 of fair and 10 of poor quality on the basis of total plate count. The higher total plate count and the presence of Salmonella spp may be attributed to poor hygienic practices or diseases such as mastitis, which could increase the risk of foodborne illnesses and the transmission of various pathogens. This raises significant public health concerns.

Keywords: Milk quality, raw milk, *Salmonella* spp., Total plate count (IPC)

STUDY OF PARATUBERCULOSIS IN MILK SAMPLES OF CATTLE FROM BETHANCHOK MUNICIPALITY OF KAVREPALANCHOWK DISTRICT

Bimala Katwal and Doj Raj Khanal

Bovine paratuberculosis (PTB), also known as Johne's disease, caused by Mycobacterium avium subspecies paratuberculosis (MAP), is a chronic, infectious disease causing granulomatous enteritis affecting cattle, sheep, and goats as well as other ruminant species. This study was conducted to determine the presence of Mycobacterium avium subspecies paratuberculosis in milk samples of cattle from Bethanchok Municipality of Kavrepalanchowk district. This cross-sectional study was conducted from November to December 2025. A total of 92 milk samples were collected from the collection centre of Bethanchok Municipality, and laboratory work was carried out in the Microbiology Laboratory of HICAST. The milk samples were tested by indirect ELISA for the presence of antibodies against Mycobacterium avium subspecies paratuberculosis. All the samples were found to be negative. The absence of positive cases in Bethanchok Municipality of Kavrepalanchowk district may be due to factors such as limited sample size, use of only one diagnostic approach, smallholder farming system and limited cattle movement.

Key words: Cattle, ELISA, Kavrepalanchowk, paratuberculosis

ASSESSMENT OF GOOD HYGIENE PRACTICES AND THEIR IMPACT ON RAW MILK QUALITY AMONG SMALLHOLDER DAIRY FARMERS IN THAKRE RURAL MUNICIPALITY, DHADING, NEPAL

Mausam Marasini and Maheshwar Dahal

This study was carried out to assess the Good Hygiene Practices (GHP) and raw milk quality in smallholder dairy farms of Thakre Rural Municipality, Dhading, Nepal. A cross-sectional study was conducted on 80 dairy farms, where a structured questionnaire was used to collect information on farmer demographics, farm characteristics, and GHP compliance. Milk quality was evaluated using the Clot-on-Boiling (COB) test, a low-cost and legally recognized field method. The study revealed that 86.25% of the farms fell into the Medium GHP category, with an average hygiene score of 14.05 out of 20. Only 11.25% of farms achieved High GHP status. The COB test results showed that 22.5% of the milk samples failed the quality test, indicating poor hygienic quality likely due to high microbial load or developed acidity. A strong relationship was observed between GHP level and milk quality, with High GHP farms having an 11.11% failure rate, Medium GHP farms 21.74% and Low GHP farms recording 100% failure. Critical hygiene gaps were identified, including no farm practicing udder drying with a clean cloth (0%), handwashing with soap was rare (2.5%), and adoption of foremilk stripping (38.75%) and tail restraint (7.5%) was low. Training had a significant positive impact, with trained farmers showing higher GHP scores (15.29 vs. 13.71) and lower COB failure rates (5.88% vs. 26.98%). This study concludes that poor adoption of basic hygiene practices directly compromises milk quality. Recommendations include practical on-farm training, promoting the COB test for self-monitoring, improving access to clean water, and developing cooperative milk chilling infrastructure to enhance milk safety and farmer income.

Keywords: Clot-on-boiling test, good hygiene practices, raw milk quality, smallholder dairy

QUANTITATIVE ANALYSIS OF ENROFLOXACIN CONTENT IN COMMERCIALLY AVAILABLE TABLET FORMULATION IN KATHMANDU VALLEY USING HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY (HPLC)

Aarati Sedhain and Sabina Lamsal

Enrofloxacin is one of the most widely used fluoroquinolone antibiotics in veterinary medicine, yet concerns persist regarding the quality of commercially available formulations in low- and middle-income countries such as Nepal. This cross sectional laboratory based study assessed the quality of commercially available enrofloxacin tablet formulations marketed within the Kathmandu Valley from July to August 2025. A total of 14 samples from five different veterinary pharmaceutical companies were collected and evaluated. Physical quality parameters including weight variation, hardness, friability, and disintegration time were assessed using standard pharmacopeial methods while the active pharmaceutical ingredient (API) content was quantitatively determined using High Performance Liquid Chromatography (HPLC) method. All samples complied with pharmacopeial standards for weight variation (±5%), friability (<1%), and disintegration time (<15 minutes. HPLC assay results showed that all products contained 97.14% to 101.7% of the labeled enrofloxacin content, meeting the 90 to 110% acceptable range. However, most samples exhibited hardness values exceeding recommended limits, indicating potential manufacturing inconsistencies that may affect drug dissolution and therapeutic effectiveness. These findings underscore the importance of strengthened quality control and post market surveillance to prevent substandard veterinary drugs, treatment failure, and AMR issues.

Keywords: Enrofloxacin, drug quality, AMR, HPLC, tablet assay

MOBILE COLISTIN RESISTANCE GENES IN Avian Pathogenic Escherichia coli (APEC) ISOLATED FROM CLINICAL CASES OF COLIBACILLOSIS IN COMMERCIAL BROILER CHICKEN

Laxmi Pun and Narayan Poudel

The poultry sector in Nepal is experiencing rapid growth; however, colibacillosis caused by Avian Pathogenic Escherichia coli (APEC) continues to pose major health and economic challenges. This study was conducted to assess the prevalence of mobile colistin resistance (mcr) genes in APEC isolates obtained from clinical cases of colibacillosis in commercial broiler chickens at the National Animal Health Research Centre (NAHRC). A total of 102 E. coli isolates were revived from stored clinical samples and screened for colistin resistance using conventional PCR targeting eight mcr genes (mcr-1 to mcr-8). Minimum inhibitory concentrations (MICs) were determined using Colistin Ezy MIC™ strips. The results revealed that mcr-4 and mcr- 1 were the most frequently detected genes, present in approximately 40% and 30% of isolates, respectively, while the remaining mcr variants occurred at lower frequencies (10–15%). Analysis of co-occurrence showed that the majority of isolates harbored two mcr genes, followed by three-gene combinations, indicating active horizontal gene transfer. MIC testing demonstrated a bimodal distribution, with one subset of isolates remaining relatively susceptible (0.5–2 µg/mL) and another displaying extremely high level resistance (≥256 µg/mL). These findings underscore the widespread presence of multidrug-resistant APEC in broiler chickens and highlight the urgent need for surveillance and prudent management of colistin use in poultry production to prevent further spread of resistance genes.

Keywords: Avian pathogenic E. coli, colistin resistance, MCR genes, broiler chickens, antimicrobial resistance

RETROSPECTIVE STUDY ON CANINE PARVOVIRUS ENTERITIS IN LALITPUR DISTRICT, NEPAL

Kajol Nayak and Shikha Rimal

This retrospective study was conducted to analyze the clinical records of dogs presented at Veterinary Hospital and Livestock Service Expert Center (VHLSEC) Lalitpur from August 2020 to September 2025 to determine the cases of Canine parvovirus (CPV) focusing on distribution pattern using Microsoft Excel. A total of 1379 clinical cases were recorded, of which 8.91%, (123) cases were positive for Rapid diagnostic test of CPV (Vet Diagnostic CPV test kit). The study revealed that puppies below 3 months of age displayed the highest susceptibility, accounting for 59.34%, (73/123) cases, Conversely, dogs older than 7 months showed the lowest cases 9.75%, (12/123). Sex-wise distribution demonstrated that male dogs 58.54%, (72/123) were more frequently affected than females 41.46%, (51/123). Breed-wise distribution showed that mixed-breed (German Shepherd cross, Spitz cross, Labrador cross) dogs represented the largest proportion of affected dogs 33.33%, (41/123), followed by German Shepherds 23.57%, (29/123) and Japanese Spitz 14.63%, (18/123), whereas other breeds including Pug 6.50%, (8/123), Lhasa Apso 4.87%, (6/123), Dalmatian 4.06%, (5/123) and Doberman 2.43%, (3/123) showed comparatively lower cases. Seasonal analysis identified April 18.70%, (23/123) August 17.07%, (21/123), and July 13.82%, (17/123) as peak months for CPV occurrence, coinciding with warm and humid conditions. In contrast, the lowest cases were recorded in January 2.41%, (3/123) and October 1.62%, (2/123) during colder months. Overall, the finding highlights the significant influence of age, sex, breed susceptibility, and seasonality on the epidemiology of CPV in Lalitpur suggesting pet owners to routinely check on the health of their canines.

Keywords: Canine parvovirus (CPV); epidemiology: Lalitpur; retrospective study

STUDY OF BABESIOSIS IN GOATS OF TRIVENI RURAL MUNICIPALITY, RUKUM WEST, NEPAL

Kobid Bista and Raju Shrestha

Babesiosis is an economically important tick-borne Haemoprotozoan disease affecting small ruminants in tropical and subtropical regions. Goats play a crucial role in Nepalese livestock production systems; however, information on caprine babesiosis is limited, particularly in western Nepal. This study aimed to determine the prevalence of Babesia spp. in goats of Triveni Rural Municipality-7, Rukum District, Nepal. A cross-sectional study was conducted, and a total of 80 blood samples were collected randomly from goats of different ages and sexes. Thin blood smears were prepared, fixed with methanol, stained using Giemsa stain, and examined under light microscopy using oil immersion (100%). Out of 80 samples examined, 4 were positive for Babesia spp., yielding an overall prevalence of 5.0%. Data were analyzed using descriptive statistics and chi-square test to assess association between infection and host factors. The study revealed a low prevalence of caprine babesiosis in the study area, which may be attributed to extensive management systems, lower tick burden, and relative resistance of local goat breeds. Nevertheless, the detection of Babesia spp. indicates the presence of tick-borne Haemoprotozoan infection in the region. Regular surveillance, strategic tick control measures, and farmer awareness programs are recommended to reduce the risk and impact of babesiosis in goats.

Key words: Babesia spp., Goat, Haemoprotozoan, Rukum

ASSESSMENT OF HEMATOLOGICAL ALTERATIONS ASSOCIATED WITH BABESIOSIS IN CATTLE AT CENTRAL VETERINARY LABORATORY, KATHMANDU

Kusum Ojha and Subash Poudel

Bovine babesiosis is an economically important tick-borne Haemoprotozoan disease that adversely affects cattle health and productivity, particularly in tropical and subtropical regions of Nepal. The present study was conducted to assess the hematological alterations associated with babesiosis in cattle at Central Veterinary Laboratory (CVL), Kathmandu. A total of 132 blood samples from clinically suspected cattle blood smears were examined using Giemsa-stain for microscopic detection of Babesia spp. and positive samples were analyzed using an automated hematology analyzer. Among total samples, 61 (46%) were confirmed positive for Babesia spp. Breed-wise analysis revealed the highest incidence in Jersey cross cattle (57.36%), followed by Holstein cross (26.20%) and Indigenous breeds (16:40%). Hematological evaluation of infected cattle demonstrated a statistically significant reduction ($p < 0.05$) in Packed Cell Volume (PCV), Hemoglobin concentration (Hb), and Red Blood Cell (RBC) count, indicating anemia. Conversely, Total White Blood Cell (WBC) count, Neutrophils, Eosinophils, Basophils, Mean Corpuscular Volume (MCV), Mean Corpuscular Hemoglobin (MCH), and Mean Corpuscular Hemoglobin Concentration (MCHC) were significantly increased ($p<0.05$). A significant decrease in Platelet count was also observed. These findings confirm that bovine babesiosis is associated with characteristic hematological alterations that can aid in diagnosis, assessment of disease severity, and clinical management in endemic regions.

Keywords: Alteration, *Babesia* spp., cattle, Hematology, tick-borne disease

MEAT SCIENCE AND TECHNOLOGY

A STUDY OF THE PHYSIO-CHEMICAL PROPERTIES OF BUFFALO SAUSAGE USING DIFFERENT TENDERIZING ENZYMES

Nanda Lal Khatri and Ishwar Subedi

The primary objective of this study was to prepare tenderized buffalo sausage from comparatively tough meat from older buffalo belly by using different sources of proteases such as buffalo pancreas, crude papaya latex and pure trypsin in different concentration Emulsion type tenderized buffalo sausages were prepared in ten different treatments treatment 10 as control) Frozen buffalo belly and frozen pork back fat was minced (o 3 mm) separately. Sausage was prepared as normal emulsion sausage preparation method by lean batter process (final temperature 15°C) Enzymes (crude papaya latex, fresh buffalo pancreas and pure trypsin in various proportions) were mixed homogenously and filled in synthetic casing of 20/22 grade using sausage stuffer. The sausage links were then steamed (98.6°C), cooled and vacuum packed in PE bags (22 micron) and kept in refrigerator 5 2°C for further quality evaluation. From the physicochemical analysis, pH, Water Holding Capacity (WHC), moisture, protein, fat and total ash of the sausage samples of different treatments were significantly different ($p<0.05$). The pH and WHC of sausage treated with 0.15% pancreas had the highest (6.22 and 0.68 respectively) whereas with 0.05% pancreas had the lowest pH and WHC (5.86 and 0.56 respectively). The highest (67.88%) and lowest (62.45%) moisture content were due to the treatment with 0.05% pancreas and 0.05% papaya latex respectively and found within the range of IMF so can be stored for several days in refrigerator. The highest (12.98%) and lowest (9.877%) protein contents were due to treating with 0.05% papaya latex and with 0.15% trypsin respectively. The highest (24.913%) and lowest (20.163%) fat contents were due to treating with 0.05% pancreas and control sample. The highest (1.171%) and lowest (0.927%) ash contents were due to treating

with 0.05% pancreas and 0.1% papaya latex respectively. For the sensorial quality, all sausage samples were significantly different for color, flavor and texture attributes at 95% confidence level. For color, sausage treating with 0.15% pancreas, for flavor and texture treating with 0.15% papaya latex got the highest scores among the treatments. The mean values of TPC of sausage samples of all treatments at day 0 (fresh) were enumerated From the analysis treatment 1 (3.68 x 103 cfu/ml) and treatment 10 (5.85 x 103 cfu/ml) were statistically different to each other and all other treatments ($p<0.05$)

Keywords: Flavor, frozen, meat, phytochemical analysis, texture

PREPARATION AND ASSESSMENT OF CHICKEN SAUSAGE IN REFERENCE OF STAPHYLOCOCCUS AUREUS AVAILABLE IN KATHMANDU VALLEY

Rikesh Devbhandari and Ishwar Subedi

Chicken Sausage it consumed in Nepal as common food among non-vegetarian population, might be taken as an important vehicle associated with illnesses caused by food hone pathogens, which lead to the development of public health hazards. It is potentially zoonotic to human's health. The sausage production is divided into several steps firstly by reducing the particle size of meat. After that, the minced meat is mixed with other ingredients and seasoning. Then, the patte was stuffed into specific casing and linked for specifically length and packaging finally. The study was carried out in broiler chicken meat samples to identify the prevalence of Staphylococcus aureus infection on Chicken Sausages. Bacterial isolation and identification were identified using sample collecting from Kathmandu district by using convenient sampling method. This study entitled "Preparation and Assessment of Chicken Sausage in Reference of Staphylococcus aureus Available in Kathmandu Valley" was carried out from August 2023 to November 2023 taking a total of 110 chicken sausage samples (10 self-prepared frozen and 100 marketed frozen chicken sausages collected from

different super-markets). A detailed procedure of microbial analysis of self-prepared and marketed frozen in the laboratory chicken sausage sample was carried out in HICAST Meat technology laboratory. Staphylococcus aureus was present in 18.18% of total samples, with higher prevalence in self-prepared sausages (30%) than marketed sausages (17%). The average TVC count of Staphylococcus aureus in self-prepared frozen and market frozen chicken sausage were found to be 12.64 cfu/g and 9.64 cfu/g, respectively which were below the permissible limit (20 CFU/g) for all samples. Antibiotic susceptibility testing revealed that isolates were most sensitive to Ciprofloxacin (70%) and most resistant to Ampicillin and Penicillin (65%). These results indicate that while the microbiological quality of chicken sausages in Kathmandu is within safe limits, the presence of S. aureus and antibiotic-resistant strains highlights the need for strict hygiene practices and monitoring during processing and storage.

Keywords: Antibiotics, frozen, health hazards, meat, *S. aureus*

PREPARATION AND QUALITY EVALUATION OF CHICKEN NUGGETS WITH DIFFERENT COMPOSITIONS

Srijan Thapa and Sunil Sapkota

This study successfully optimized the mixing ratio of soy and corn flour as binders in chicken nuggets, demonstrating that these alternatives significantly enhance product quality compared to traditional wheat flour. Among the five formulations tested. T3 (6% soy flour and 4% corn flour) emerged as the superior treatment. Physio-chemical analysis revealed that 13 possessed the highest moisture content (41.77%) and water-holding capacity (35.43%), resulting in improved juiciness and tenderness. The incorporation of soy flour significantly boosted protein levels (reaching up to 28.23%). while maintaining a high energy density of approximately 282 kcal/100g. Importantly. all formulations remained within safe microbial limits, ensuring food safety. Sensory evaluations confirmed that T3 was the most preferred by panelists, scoring highest

in appearance, taste, texture, and overall acceptability. While T3 was marginally more expensive to produce than other variants, the cost difference was negligible relative to the substantial improvements in nutritional and functional value. In conclusion, replacing wheat flour with a combination of soy and corn flour-specifically at the 6:4 ratio-produces a nutrient-dense, sensory-superior chicken nugget. This formulation offers a viable path for product diversification and commercialization within the Nepalese poultry industry, providing a high-quality, protein-enriched option for consumers.

Keywords: Chicken nuggets, Corn flour, poultry industry, proximate analysis, sensory evaluation, soy flour

VALUE CHAIN ANALYSIS OF BROILER CHICKENS IN NEELAKANTHA MUNICIPALITY, DHADING

Manoj Pokharel and Nanu Jha

The livestock subsector, particularly broiler production, is vital for livelihood and food security in Nepal. It is a profitable agro-industry that can reduce unemployment in rural and semi-urban areas under diverse climates. Despite its potential, commercialization has lagged. Farmers face challenges such as low profit shares due to limited value chain knowledge and lack of integration in the poultry sector. For the value chain analysis of broiler chicken in Neelkanth Municipality, Dhading, the key actors were identified. From the 114 registered farms, 60 farmers, 5 input suppliers, 5 traders, 12 processors, and 21 retailers were purposively selected for the study. Production cost per kg of meat was Rs 203.42, with cost of feeds covering major portion (67%). This research illustrated the process by which live birds initially sold at a rate of Rs 251 kg-1 and contributed to enhancing the retail price to Rs 394 kg-1. Processors shared highest profit margin on sale price (23%) along the chain, followed by producers (19%) and retailers (13%). The B:C ratio was 1.23, showing economic viability of broiler farming. Price spread was 57% and producer's share 64%, indicating a fairly efficient

marketing system. It is recommended that farmers should integrate their business with value chain actors and with local industries to reap the benefits of their contacts. Similar contracts are to be made with traders for marketing in time on regular basis. Broiler value chain upgraded through technology-based processed meat production system and competitive cost management were found to be effective to enter into new value chain management so as to trap the maximum benefits to farmers and other value adding actors rather than middleman and broker.

Key words: B/C ratio, price spread, profit margin, producer share, value addition

QUALITY EVALUATION OF CHICKEN SAUSAGE AVAILABLE IN KATHMANDU DISTRICT, NEPAL

Parmeshwar Joshi and Dilliram Sedai

Chicken sausage is widely consumed in Nepal and may serve as a potential vehicle for food-borne pathogens, posing public health and zoonotic risks. This study evaluated the nutritional, physicochemical, and microbiological quality of chicken sausages available in Kathmandu District from September 2023 to July 2024. A total of 60 samples, including 40 commercial samples (Urban and Valley brands) and 20 laboratory-prepared sausages, were analyzed at the HICAST Meat Technology Laboratory. Microbiological assessments included Total Viable Count (TVC) and isolation of Salmonella spp., Escherichia coli, and Staphylococcus spp. A significantly higher microbial load ($p<0.05$) was observed in laboratory-prepared sausages compared to commercial products. E. coli was the predominant isolate in laboratory samples, whereas Staphylococcus spp. was more prevalent in commercial samples, possibly due to unhygienic handling, improper packaging, and inadequate storage conditions. Prevalence in laboratory-prepared sausages was recorded as E. coli (40%), Staphylococcus spp. (35%), and Salmonella spp. (20%), while commercial samples showed lower rates Urban sausages: E. coli (20%), Staphylococcus spp. (20%), Salmonella

(0%); Valley sausages: E. coli (25%), Staphylococcus spp. (25%), Salmonella (0%). The association between sample type and pathogen prevalence was statistically significant (x 29.14, $p < 0.00001$). Microbial counts in all samples exceeded acceptable safety limits for processed meat products, indicating potential health risks. The findings demonstrate that both commercial and laboratory-prepared sausages may harbor pathogenic bacteria, emphasizing the need for improved hygiene, storage, and handling practices. Proper cooking before consumption is strongly recommended to minimize public health risks.

Keywords: Chicken sausage, Microbial analysis, Nutritional, Physiochemical

AGRI-ECONOMICS AND AGRIBUSINESS

ASSESSMENT OF POST-HARVEST LOSSES OF BANANA IN NAWALPARASI (WEST)

Manisha Shah and Bishnu P. Bhattarai

The study entitled "Assessment Post Harvest Losses of Banana in Nawalparasi (west)" was conducted from February to April 2026 where 100 respondents were selected randomly for primary data and information collection (70 farmers, 10 wholesalers, 10 retailers and 10 street vendors). The objective of the study was to examine the post-harvest losses of banana in Nawalparasi district. 94 percent of farmers produced banana in large scale and harvested them at mature green stage whereas, 49 percent of the farmers sold their fruits in local market. Traditional type of farming, deformed market structure, labor shortage, influence of Indian banana, low price and high transportation cost were identified as major problems for commercial production and marketing. 74 percent of farmers grade their banana basically by size and colour whereas, 28.50 percent used it as cushioning material. Post-harvest losses of banana were observed in different stages of production like 9 percent loss in field during harvesting, 3 percent during packaging, 5 percent during processing and 1 percent during storage stage. In case of wholesalers, 2 percent loss was found during collection, 3 percent during transportation, 4 percent during supply to retailers. At retailers, 3 percent during collection, 2 percent during transportation, 2 percent during storage, 4 percent during retailing. At street vendor's, 2 percent during transportation, 5 percent during unsold product post-harvest losses of banana was carried out. The overall losses of banana in marketing channel from field harvesting to street vendor were found 45 percent.

Keywords: Commercial problems, marketing channel, packaging, problems, transportation

MARKETING OF SWEET ORANGES IN RAMECHHAP DISTRICT OF NEPAL

Niroj Khadka and Hari Krishna Panta

The cross-sectional study titled "Marketing of Sweet Oranges in Ramechhap District of Nepal" was carried out in wards 6 and 7 of Ramechhap municipality, Ramechhap District, Nepal to analyze the marketing system of sweet orange in Ramechhap District. Ramechhap municipality was randomly selected using the lottery method, wards 6 and 7 were purposively selected and from these ward 92 respondents were selected through convenience sampling. Data collection involved semi-structured questionnaires, focus group discussions, and key informant interviews, with analysis performed using descriptive statistics, regression, correlation, chi-square test and t-tests, in SPSS and Excel. Six marketing channels were identified, Channel 1: Producer Wholesaler → Retailer Consumer channel being the most dominant (68.5%). Efficiency was highest in channels Producer Retailer Consumer. Regression analysis indicated that consumer price and the number of intermediaries were the key factors influencing marketing margins while sales volume, years of experience, and contract farming showed no significant effect. The t-test revealed there is notable difference in revenue between farmers with and without contract farming. Major production challenges included lack of irrigation, unavailability of input on time, and insect and disease, while marketing was hampered by unorganized market, frequent price fluctuations, and lack of transportation and storage facilities. Despite these challenges, 97.4% of farmers reported satisfaction with sweet orange farming., Strengthening cooperatives, enhancing farmers' access to market information, credit and training, and promoting shorter marketing channels are key to making sweet orange farming in Ramechhap District more profitable and sustainable.

Keywords: Contract farming, cooperatives, marketing channel, marketing efficiency, Ramechhap District, sweet orange

ROLE OF FARM MECHANIZATION TO REDUCE FARMERS DRUDGERY IN ARGHAKHANCHI, NEPAL

Pratiksha Mahat and Huma Neupane

This study was conducted to analyze the role of farm mechanization in reducing farmers' drudgery in Arghakhanchi, Nepal. The research was carried out in two contrasting terrains, Malarani Rural Municipality (hill terrain) and Sandhikharka Municipality (plain terrain), with 92 farmers selected using multi-stage stratified random sampling. Data were collected through household surveys, focus group discussions, key informant interviews, and field observations, and analyzed using descriptive statistics, two-way ANOVA, independent t-tests, and thematic analysis. Results showed that mechanization significantly reduced labor and time requirements for key farming operations, with ploughing time decreasing from 77.41hours per hectare using traditional methods to 7.36 hours with tractors and 6.89 hours per hectare with mini-tillers, while threshing time reduced from 9.52 hours manually to 1.30 hours with machines. Despite these benefits, only 45.65% of farmers had adopted mechanization, with major barriers including high machinery costs, fragmented landholdings, limited training, lack of women-friendly tools, and restricted decision-making power among women. The study concludes that promoting terrain suitable and inclusive mechanization through subsidies, women-focused training, and custom hiring services can substantially reduce drudgery, enhance productivity, and improve rural livelihoods in Nepal's hill agriculture.

Keywords: Adoption barriers, drudgery reduction, farm mechanization, gender, hill agriculture.

CONSUMER PREFERENCE AND PURCHASE BEHAVIOR FOR DRAGON FRUIT IN CHITWAN

Pragya Aryal and Hari Krishna Panta

This study made an attempt to identify the consumer preference and buying behaviour of dragon fruit in Chitwan district. The relationship between socio-demographic features with preference and purchasing behaviour were assessed. The population of the study was dragon fruit consumers of Bharatpur municipality (ward number 4 and ward number10), with sample size of one hundred and forty respondents from residential area. They had partial or complete idea about the dragon fruit and have consumed it at least once. A close ended questionnaire had been developed to have in-depth analysis of consumer preference and purchasing behaviour. Descriptive as well as inferential analysis (Multiple regression & Correlation) were used for the entire analysis of data. It was found that individual attitudes, age, education, income occupation were the variables that were found to be influencing the consumer while buying dragon fruit. Multiple regression analysis revealed that frequency of buying had significant relationship between annual household income only. While correlation analysis found that income had highly significant relationship with the quantity of fruit purchase per buying. Higher price and inaccessibility were the main factor discouraging to buy dragon fruit. Future research should recruit a larger, more diverse samples and investigate additional characteristics (such as texture, aroma, and packaging). These approaches would contribute to a deeper understanding of customer preferences and guarantee that findings are relevant across various markets.

Keywords: Attitudes, frequency, health consciousness, socio-demographic features

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IMPACT OF FLOOD AND LANDSLIDE ON THE ECONOMICS OF DAIRY FARMERS IN KAVRE DISTRICT

Anjana Poudel and Sudha Sapkota

Natural disasters such as floods and landslides pose major threats to agricultural livelihoods in Nepal, especially the dairy sector, which provides crucial income and employment in rural communities. This study assesses the economic impact of the September 2024 flood and landslide on dairy farmers in Bethanchok Rural Municipality of Kavre District, Nepal. The objective was to compare the production cost, milk yield, income, and profitability before and after the disaster, and to identify factors influencing these changes. A total of 200 dairy farmers were surveyed using stratified random sampling. Data were analyzed using descriptive statistics, paired t-tests, and multiple regression models. The results revealed that the average cost of milk production per dairy animal increased by 10.7% post-disaster, while milk yield decreased by 75 liters per lactation. Profit margin per liter fell from NPR 34.64 to NPR 25.47. Small-scale farmers faced greater financial losses than commercial ones. Regression analysis showed that fodder unavailability, livestock loss, market disruption, and infrastructure damage significantly contributed to rising production costs and declining milk output ($p<0.05$). The study concludes that natural disasters significantly undermine the economic stability of dairy farming, especially among smallholders. The findings highlight the need for disaster-sensitive policies, including emergency fodder reserves, infrastructure repair, farmer training on climate-adaptive practices, and livestock insurance. These insights are vital for local governments and cooperatives working to strengthen the resilience of Nepal's dairy sector.

Keywords: Cost of production, dairy sector, flood, landslide, profitability, yield

DETERMINANTS OF INSURANCE SCHEME ADOPTATION FOR GOAT FARMING IN PALPA DISTRICT, NEPAL

Prabin Khatiwada and Nanu Jha

Goat farming faces significant economic risks due to environmental and biological stressors such as natural disasters, diseases, pests, climate change, and erratic weather. Risk of goat production is often related with the market price risk, credit risk, technical and other risks. Goat insurance is one of the important strategy for sharing and minimizing trauma from the risks related to goat farming. To assess the determinants of goat insurance adoption, a field study was conducted at Palpa district among the insurer and non- insurer goat farmers based on the purposive sampling. During this study, household survey. Focus Group Discussion (FGDs) with lead farmers and Key Informant Interview (KII) with the concerned stakeholders were conducted. The collected data were analyzed to assess the determinants of insurance scheme adoption on the goat farmers; their income level and hindrances associated with goat insurance. Descriptive statistics were used to analyze the socio-economic and demographic variables of insurer and non-insurer farmers. Logit model regression was used to analyze the determinants of adaptation of different variables on adoption of goat insurance. In addition, t-test was also done to compare the quantitative variables of two categories of respondent, insurer and non-insurer. The logit model results revealed that awareness about insurance, frequency of parasite recurring in goat have a significant ($p<.05$) effect on the adoption of goat insurance. The study underscores the need for a strategic policy to promote goat insurance in Palpa district. Both the government and non-life insurance companies must prioritize enhancing farmer awareness and understanding through targeted advertising and training to establish credibility and reliability. These findings will be helpful for the improvement of different goat insurance policy and programs implemented by different government bodies and insurance companies.

Keywords: Adoption, goat insurance, improvement of service, Impact, Risk factor

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Keywords: Cost of production, dairy sector, flood, landslide, profitability, yield

CONSUMER PREFERENCES AND WILLINGNESS TO PAY FOR INDIGENOUS CROPS IN KATHMANDU VALLEY, NEPAL

Pratima Thapa and Maniratna Aryal

This study attempted to identify the consumer preference and willingness to pay for indigenous crops in Kathmandu valley with sample size of one hundred twenty respondents. The relationship between socio-demographic features and factors affecting willingness to pay were assessed. This study focuses on preparation for the marketing of indigenous products and investigates consumers' preference towards them. Study revealed that the major occupation of the respondents was business (28%), followed by the corporate sector (22%). Awareness of indigenous crops among consumers is relatively high, with nearly 80% of respondents perceiving them as healthier than conventional crops. Weekly Haat Bazars and farmer's markets were identified as the primary access points while the consumption of indigenous crops, remains largely periodic rather than regular. About 85% respondents showed positive towards indigenous crops and a significant proportion (40%) willing to pay a price premium, particularly in the range of 5-10%. A small but notable niche market was identified, where consumers were willing to pay premiums exceeding 40%. The regression model confirmed that the selected socio-economic and behavioral variables like age, gender, education, occupation, income and consumption behavior collectively had a statistically significant effect on consumer's willingness to pay for indigenous crops in Nepal. Besides high prices, low accessibility and inadequate information are key barriers to purchasing Indigenous crops.

Keywords: Consumers preference, food security, indigenous crops, willingness to pay, super foods

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VALUE CHAIN ANALYSIS OF DAIRY SUB-SECTOR IN KATHMANDU VALLEY

Jaya Joshi and Tilak Raj Chaulagain

The research titled "Value Chain Analysis of Dairy Sub-Sector in Kathmandu Valley" was conducted to examine the dairy value chain to identify the key players, the level of profitability, and the industry's strengths, weaknesses, opportunities, and threats. Primary data were obtained on 347 respondents, including dairy farmers, traders, input suppliers, collectors, and consumers, who were sampled using a non-probability convenience sampling method. The results highlighted the scale of farming operations, with 66 (21.4%) respondents owning a "very small herd" (3-5 livestock), 102 (33.1%) owning a "small herd" (6-8 livestock), and 86 (27.9%) owning a "medium herd" (9-12 livestock). Regarding land ownership, 37.9% of respondents owned 2 or fewer ropani of land, with 36% owning 3 to 8 ropani. In terms of economic performance, the study revealed that dairy farmers incurred substantial costs, including Rs. 234/kg for ghee production, and experienced revenue generation with 66.7% of the retail price from paneer and 6% added value from fat extraction. The Cobb-Douglas model (R=0.982. R2=0.964) confirmed that key factors such as feed and concentrate consumption, land ownership, labor, and investment in infrastructure significantly affect milk production and farmer income. The research suggests that closer cooperation should be achieved, better infrastructure should be implemented, and the policy should be revised to make farmers more involved and competitive in the dairy value chain.

Keywords: Dairy, farmers, feed, livestock, stakeholders, value chain

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VALUE CHAIN ANALYSIS OF KIWI IN DOLAKHA NEPAL

Anup Raj Neupane and Raj Kumar Adhikari

Kiwi cultivation is emerging as a high-value crop in Nepal's mid-hill regions, yet knowledge of its value chain remains limited. This study analyzes production practices, economic viability, and marketing challenges of kiwi farming in Jiri Municipality, Dolakha District, based on primary data from 100 farmers. A mixed-methods approach was applied using structured interviews and field observations. The most cultivated varieties were Alison, Hayward, and Molti, with 58% of farmers adopting legume-based intercropping to enhance soil fertility. Post-harvest practices emphasized grading, with 77% of farmers sorting by ripeness and 55% by size. A-grade fruits commanded the highest price (NPR 200/unit), while medium-grade fruits provided the largest yield (1409.04 kg). Marketing occurred mainly through direct consumer sales and retail-wholesale channels. Analysis of marketing margins revealed that producer's share varied across channels, with the highest at the direct-consumer level and the lowest when multiple intermediaries were involved, highlighting significant price spreads that reduced farmer profitability. The average fixed cost of cultivation was NPR 276,175/ha-dominated by trellis materials and gabion nets-while variable costs averaged NPR 49,386.82/ha, largely due to organic manure. SWOT analysis showed favorable agro-climatic conditions and low pest incidence as strengths, but highlighted major challenges including high establishment costs, long juvenile periods, inadequate cold storage, competition from imports, and limited technical knowledge. The study recommends targeted training, subsidies for quality saplings and infrastructure, expansion of cold storage facilities, and stronger farmer cooperatives to improve profitability and strengthen kiwi's role in rural economic transformation in Nepal's mid-hills.

Keywords: Economics, farming, kiwi, marketing, value chain

VALUE CHAIN ANALYSIS OF POTATO IN HIGH HILLS OF DOLAKHA DISTRICT

Ujjwal Dhoj Khadka and Tilak Raj Chaulagain

This research was conducted to assess the value chain of potatoes in the Dolakha district. The primary information was collected from the field survey using a pre-tested semi-structured interview schedule, moreover, one Focus Group Discussion and three Key Informant Interviews were also done. The secondary information was collected by reviewing the relevant literature and publications. Altogether, 100 respondents were selected as the sample for this study using a simple random sampling technique. Descriptive statistics, Cobb-Douglas production function, and indexing were used for data analysis using the statistical software, MS-excel, and SPSS. The average total cost of potato production was calculated NRs. 19832.61/ropani with an average total return NRs.35692.17/ ropani. The gross margin (NRs.22359.56/ropani), net margin (NRs. 15859.56/ropani) and benefit-cost ratio (1.79) indicated that potato production was profitable. The return to scale of potato production was calculated at 31.435 which indicated that the production function exhibited an increasing return to scale. The price spread and producer's share were found to range from 0 to Rs.20.15 and 67.5% to 100% respectively per kg potato transaction. Furthermore, indexing ranked- lack of fertilizers in required time and quantity, lack of quality planting materials and incidence of disease and pest as the most important problems associated with potato production and knowledge about marketing, proper storage facilities and lack of transport were major constraints of marketing of potato, respectively. The government should provide necessary assistance in the production process and intervene in the potato marketing system promoting the marketing channel where the price spread is lowest and the producer's share is the highest.

Keywords: BC ratio, Cobb Douglas, constraints, marketing, Potato

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ECONOMIC ANALYSIS OF PADDY IN RUPANDEHI DISTRICT

Sabin Panthi and Kamal Raj Gautam

This study examines the economic analysis of paddy production in the Rupandehi District, Nepal, focusing on production costs, profitability, and market structure. A total of 70 respondents, inhaling 50 farmers, 10 wholesalers/millers, and 10 retailers, were surveyed using a mixed-methods approach. The cost of production per quintal is NPR 1.088 88 for irrigated farming, NPR 1,205 for rain-fed farming, and NPR 2,443.87 for common rice grown under rain-fed conditions. The dominance of labor costs suggests that mechanization, such as tractors and threshers, could significantly reduce production expenses and enhance efficiency Farmers cultivating paddy on irrigated land achieve an average yield of 45 quintals per hectare, whereas those relying on rain-fed systems record 39 quintals per hectare, while common rice under rain-fed conditions yields 31.5 quintals per hectare. These yield differences highlight the cost efficiency of irrigation despite its higher input requirements. Market inefficiencies, such as dependence on middlemen and inadequate storage, force 40% of farmers to sell immediately after harvest at lower prices. The average market price for fine rice ranges from NPR 2,500 to 3,000 per quintal, while common rice is priced between NPR 1,800 and 2.200 per quintal. Seasonal price fluctuations further impact profitability, with post-harvest prices declining by 15% but rising by 20% during the lean season. The Minimum Support Price (MSP) introduced in 2022/23 set prices at NPR 2,967 per quintal for common rice and NPR 3,128 per quintal for fine rice. The BCR for irrigated fine rice was found to be 2.76, indicating high profitability with a net profit of NPR 86,000 and a gross margin of NPR 96,000. The BCR for rain-fed fine rice stood at 2.39, reflecting substantial profitability with a net profit of NPR 65,500 and a gross margin of NPR 73,500. In contrast, common rice grown under rain-fed conditions, though still profitable, had a significantly lower BCR of 1.7, with a gross margin of NPR 39,000 and a net profit of NPR 32,000.

Keywords: Economics, marketing, paddy, price, supply Chain