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VET VISION

Our Voice Our Vision

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&

AWARD FOR OUTSTANDING VETS

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INDEX

" Inside "

		Page no.
1	From the Editor's Desk	3-5
	Articles	
2	Human - Animal interaction and its impact on animal welfare ■ Animal welfare ■ Animal welfare assessment ■ References	5-17
3	Acaricide and Anthelmintic Resistance : Two Sides of the same coin ■ Rational drug use ■ Integrated pest management ■ Monitoring and surveillance ■ Genetic selection	18-20
4	IVA News	21-22
5	Pant Moringa Tablets : An Innovation for Human Health	23-27
6	Innovative Artificial Milk Suckling Device for Pigs	28-29
7	Editorial Board	30

FROM THE EDITOR'S DESK

NEP 2020- Points to ponder.

After a gap of 34 years, the education system in the country is all set for a complete makeover with the introduction of the National education policy 2020. On 29 July 2020, the cabinet approved a new National Education Policy to introduce changes to the existing Indian education system. To give the education system a fresh look the name of the Ministry of Human Resource Development is changed tothe Ministry of Education. The new policy has a clear orientation towards creatinga multitalented graduate base, duly skilled and vocation oriented, to meet the changing needs of society.

The policy envisions a completely overhauled and re-energized higher education system in India with creation of multidisciplinary universities giving more scope to the students to make their own choices and selection of subjects suiting their competence.Strong central government control over education throughout the country will make the standards uniform and the integration of the graduates of one state with others will become smooth leading to a pan-India-based workforce with a uniform competence level.

The NEP-2020 has proposed revamping the academic program structure with an innovative system of multiple entry and exit with options to award certificate, diploma, UG degree general, or degree research, and one or two years of master's degree.As suggested by the NEP 2020, the education will follow a 5+3+3+4 system where the students will spend 5 years strengthening their foundation, 3 years in the preparatory stage, 3 years in the middle stage and the rest 4 years in the secondary stage.

Currently, the Veterinary and Animal Husbandry course in our countryis a Five and half year UG programand is offered by all the veterinary colleges throughout the country, consequent to the recommendations of various Committees as per the changing needs of society. The Veterinary Council of India, a statutory body, governs the minimum standards of veterinary education in the country.As per the NEP 2020, Professional councils like ICAR, VCI, NCTE, CoA, NCVET etc. will collaborate with General Educational Council (GEC) as professional standard-setting bodies (PPSSB)instead of the purpose for which they are established.

The professional bodies will continue as a member of GEC to create academic standards in their respective domains, but they will not have regulatory power. The World Veterinary Association holds that all veterinarians should be subject to the authority of a Veterinary Statutory Body, established under the law of the authority within which they practice veterinary medicine.

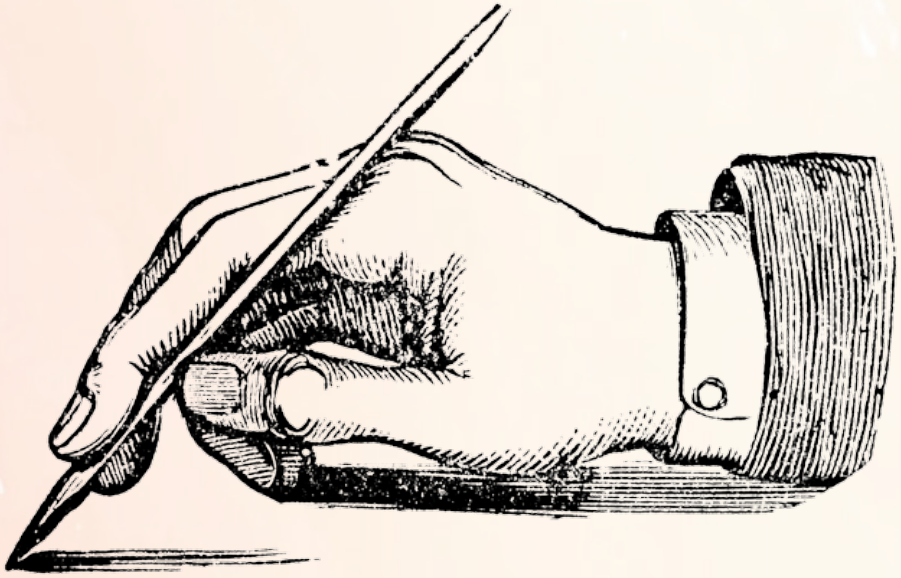
Veterinary education is different from general education, wherein the professional graduates deal with the lives of animals and the lower strata of people who own them, thus playing a role in the improvement of the economy of the country. Any dilution of the courses or the duration will hurt the quality of the competence of outgoing veterinary graduates. Veterinary education is created into a five- and half-year course with various disciplines and a one-year internship through which the students are exposed to various aspects ofveterinary science serving the health and welfare of the animals.

The National Education Policy (NEP), 2020 suggests a four-year undergraduate program (FYUP) with multiple entry and exit options for the students, allowing certificate, diploma, degree, and honours degree at the end of the first, second, and third year, respectively which may be good for non-professional graduate programs. The FYUP will allow “the opportunity to exp¬erience the full range of holistic and multidisciplinary education in addition to a focus on the chosen major and minors as per the choices of the student” (NEP 2020: 37).

Any dilution in the present system of veterinary education will reduce the competence levels of the students. Veterinarians deal with the precious lives of animals and any change in the existing pattern, if planned, needs to be discussed at length before implementation. The proposed changes need to be time evaluated otherwise they become a mismatch to the needs ofsociety. Multiple entry and exit options are not suitable for veterinary education as it is an integrated approach towards the creation of holistic professionals knowing all the disciplines where all are core in terms of their application.

Under the NEP 2020, asingle regulatory structure, GEC, will govern all the forms of education in the country with the exception of medical and legal education systems. Whereas, veterinary education, a field dealing with animal health (equivalent to human health) and productivity is shown as an allied sector of agriculture and brought under the scope of GEC, though the mandate and responsibilities are almost similar to that of medical education.

The regulatory authority of veterinary education in India, the VCI had represented the matter to the Government of India with relevant data and facts and requested to keep the veterinary profession as a separate entity as is planned in the case of medical and legal professions. The team of “Vet vision “feels happy to share that the GOI has consented to the proposal put forth by the Veterinary Council of India in this regard and forwarded the matter to the Ministry of education for consideration.



HUMAN - ANIMAL INTERACTION AND ITS IMPACT ON ANIMAL WELFARE

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Farm animals have undergone the process of domestication, a continuing genetic process that affects an entire species over many generations aimed at modifying the animal's behavior, anatomy, and physiology to suit mankind's specific needs (Siegel,1993). Domestic animals played a significant role in the human evolution and history. The domestication of animals has contributed to the rise of modern civilizations and led to the most important socioeconomic transitions. Consequent to domestication humans and animals developed a strong relation in terms of a giver (human) and a taker (animal) of care. As the human population and food needs increased, a change occurred from backyard keeping of livestock to intensive rearing with an intent to produce more in an economical and sustainable way adding commercial aspect to livestock keeping. Intensive livestock production resulted in maintaining substantial number of animals away from their natural environment, taking care about shelter, food, and diseases by providing suitable environment. Consequent to domestication, animals have lost few of their abilities to survive on their own and have become dependent on the humans for their wellbeing. Human and animal interactions have become a routine in the day-to-day activities and elicited positive relationships. The human-animal relationship has become an important aspect of animal welfare. Due to the efforts of several animal welfare and animal rights advocates(Singer (1975) and Regan (1983)), the anthropocen-

tric approaches, having human domination at the center gave in way to biocentric approaches, wherein all the living things areconsidered as co-sharers of the earth's resources and it is the duty of humans to take care of all resources as being at the higher level of development. Thus, animal welfare considerations have become part of scientific animal management.

Animal welfare :

Animal welfare is the ability of an animal to cope up physiologically, behaviorally, and emotionally with its environment.Animal welfare denotes to the quality of life experienced by an animal. Measuresfor the animal welfare in the form of meeting the needs of animal increases the coping ability of ananimal.

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Animals have a wide range of needs that are a consequence of the many functional systems that make life possible. If an animal has a need, its motivational state is affected so that behavioral and physiological responses that should result in remedying that need can be made. These coping responses allow the animal to control and maintain mental and bodily stability (Fraser and Broom, 1990).

The Office International des Epizooties (OIE), commonly known as World Organization for Animal Health, defines an animal's welfare to be good if the animal: "is healthy, comfortable, well nourished, safe, able to express innate behavior and not suffering from unpleasant states such as pain, fear of distress." (OIE, 2010).

Regarding animal welfare, free access to outdoor facilities for all animal groups for their entire life or at least part of it is central to organic livestock production. Animal welfare involves the concept of treating the animals as sentient beings and accepting to the

fact that they also suffer emotionally. Human- animal interaction should be aimed at providing comfort and avoiding stress keeping the concept that animals are not born to serve humans but are born equally with rights and freedoms as humans enjoy though brain capacities are less developed.

In broader sense animal welfare refers to the relationships people have with animals and the duty they perform to assure that the animals under their care are treated humanely and responsibly. The Five freedoms of animals outlined by Brambell committee in response to issues mentioned in the book Animal machines by Ruth Harrison in 1964 are,

1	Freedom from hunger or thirst by ready access to fresh water and a diet to maintain full health and vigor
2	Freedom from discomfort by providing an appropriate environment including shelter and a comfortable resting area
3	Freedom from pain, injury or disease by prevention or rapid diagnosis and treatment
4	Freedom to express (most) normal behaviour by providing sufficient space, proper facilities, and company of the animal's own kind
5	Freedom from fear and distress by ensuring conditions and treatment which avoid mental suffering

Ensuring in meeting the five freedoms will lead to increased fitness and survival capacity of animals as the welfare conditions are fully satisfied.

A more recent concept of animal welfare is based on allostasis, or the ability to cope with stress (McEwen and Wingfield, 2003;). Allostasis concept states that achieving all the five freedomsis an unrealistic model to assess an animal's well-being because achieving all five would benot possible. Most animals would

naturally experience hunger, which stimulates their hunting/ foraging behaviors. Thus, achieving one thing would be in direct conflict with another. Meeting all the requirements will lead to loss of certain basic species-specificbehaviors.

Some behaviors are so important that animals will suffer either psychologically or physically if prevented from displaying them. Expression or chance to express certain natural behaviors is particularlyimportantotherwisethepsychologicalneedsofanimals are not met. Indeed, animals are strongly driven to perform such necessary, natural behaviors even after basic physiological requirements are met, such as the provision of food, water, and shelter. The chronic deprivation of needs and behaviors can lead to stress. Deprivation of basic needs constitutes inhumane management leading to reduced ability to cope up with its environment.

An animal is in a good state of welfare if it is healthy, comfortable, well-nourished, safe, able to express innate behavior, and if it is not suffering from unpleasant states such as pain, fear, and distress. Good animal welfare requires disease prevention and veterinary treatment, proper shelter management, nutrition, humane handling, and humane slaughter. Animal welfare refers to the state of the animal; the treatment that an animal receives is covered by other terms such as animal care, animal husbandry, and humane treatment. Protecting an animal's welfare means supporting its physical and mental needs.

Status of animal welfare and laws in connection to animal welfare:

An international animal welfare organization, the World Animal Protection, has developed the Animal Protection Index (API), in which 50 nations are evaluated based on their animal welfare policies. The index establishes which country has the highest score (A) and lowest score (G). India was rated 'C' on the Animal Protection Index released in 2020, alongside Spain, France, Germany, and Poland.

According to Article 51(g) of the Indian Constitution, Indian citizens shall be obliged to preserve & improve the environment, including forests, lakes, rivers, and wildlife, & to have compassion

for living creatures. This article focuses on various rights of the animals in India that one might not be aware of.

Animals are also essential for supporting the ecological balance on the earth. In recent years, the protection and welfare of animals have taken a prominent place in the country. Every year billions of animals are exploited by humans for their benefit and put them in a position to suffer harm and pain. Various legislation such as the Prevention of Cruelty Act, 1960, and the Wildlife Protection Act, 1972 are there to protect the animal life on earth. The constitution of India has also recognized the sanctity of animal life and laid down protection and treatment of animals with dignity as a fundamental duty of the citizens of India. This article will focus on the various legislation and laws for wildlife protection.

Animal welfare assessment:

Anthropomorphic approach: Anthropomorphism refers to the practices in which humans attribute human emotional and behavioral features to non-human animals and objects. Anthropomorphic behaviorsdo not have any scientific basis and not supported by scientific knowledge, but by the human intrinsic need to relate with someone that is easily understandable and that easily understands us. This may lead to wrong interpretations of the animal's actual state. This approach often depends on the ability to correlate the personal feelings to the animal's emotional status, which are often aimed to satisfy the human need for a certain type of relationship, rather than trying to find the animal's actual emotions, motivations, and intentions.

Animal need-based approach: The welfare of managed animals is dependent upon the degree to which they can adapt without suffering to the environments provided by man." (Carpenter 1980). Three main components that are included in the assessment of animal welfare; the animal's normal biological functioning, its emotional state, and its ability to express certain normal behaviors.In the past, animal welfare assessments are focused on quantifiable measures such as health of the animal,

body condition and other biological measures. But present-day measures include the emotions and feelingsof an animal when measuring their welfare. How an animal is feeling is not easy to measure, but there are many studies demonstrating that it is possible. Anthropomorphic interpretations are related to interpret animal emotions, and we can use intuitive inference – certain behaviors are intuitively likely to reflect certain affective states (emotions and feelings). Natural preferences, expressions and normal physical and physiological functions are important to be known prior to conducting an assessment. Welfare is a multidimensional concept. It includes both physical and mental health and includes several aspects such as physical comfort, absence of hunger and disease, possibilities to perform motivated behavior, etc.

Animal welfare encompasses both the affective (emotional) and physical state of an animal. However, often only prescribed (numerical) measures such as the size of an enclosure, the depth of a pool, the nutritional content of food and the healthcare provided, are often used to assess the welfare of the animal. While these measures can give some clue about the environment and condition the animal is in, they do not inform us as to what the animal is feeling and so its well-being. Assessing numerical measures alone means we cannot really know if the animal's welfare is good or not.

Indicators for animal welfare: There are several types of indicators which directly reflect the welfare status of an animal. In broader terms, welfare indicators can be grouped under four categories:(Sejian etal 2011)

(1) behavioral, (2) physical, (3) physiological and (4) production oriented

- **Behavioral:** Changes in behavior such as increased aggression to pen mates, withdrawal, stereotypies, and changes in use of enrichment.
- **Physical:** Indicators relating to the observable physical condition of the animal, e.g., body weight, state of the coat, posture, lameness, and excessive attention to surgical sites.

- **Physiological:** Parameters such as heart rate, respiratory rate, levels of stress hormones such as corticosteroids.
- **Production:** Parameters include the milk yield and growth rate.

Certain criteria to assess animal welfare:

- **Good feeding**
  - Absence of prolonged hunger.
  - Absence of prolonged thirst.

Outcome: Good body condition, age-appropriate weight, healthy skin and active disposition, absence of unnecessary walking

- **Good housing**
  - Comfort around resting.
  - Thermal comfort.
  - Ease of movement.

Outcome: Normal levels of resting and sleeping, exhibition of play behavior

- **Good health management practices:** inspection, handling, treatment, pain mitigation, nutrition, breeding, biosecurity, etc.

Outcome: Absence of injuries, absence of disease, absence of pain induced by management procedures, such as castration, tail docking, dehorning, etc.

- **Appropriate behaviordue to proper physical environment:** space, feeder, flooring, temperature, air quality, protection

Outcome: Expression of appropriate social behavior, absence of stereotypic behaviors. human approach behaviors.

Examples of behaviors that can indicate positive welfare states (Boissyetal 2007, and Napolitani etal 2007).

- Good self-care, including grooming,
- Normal activity levels and time budget, including sleep patterns.
- Seeking interactions with humans,
- Curiosity and interest in exploring

- Appropriate social interactions with conspecifics, including allogrooming,
- Normal mating,
- Anticipatory' behavior,
- Using enrichment items,
- Interest in food treats,
- Play vocalizations associated with positive welfare,
- Normal learning and cognitive functions

Health indicators included in the welfare assessment protocol for dairy cows (Rousing et all 2000),

Body part	Clinical parameters	Welfare relevance
General appearance	Body condition score	A poor body condition may cause long-term discomfort and an increase in disease susceptibility caused by impaired immune competence. It indicates metabolic disorders, sub-optimal management or chronic coping difficulties.
Skin	Skin parasites Skin infection Pressure sores	Pruritic skin disorders result in long-term discomfort and increase the risk of secondary self-inflicted lesions to e.g. the teats. Skin injury and infection caused acute and chronic pain. Provides information about problems regarding the housing system, management, or underlying diseases.
Legs	Lameness Hoof care	Lameness indicates a painful leg condition and affects the freedom of movement and the performance of behaviors. Overgrown or deformed hooves might indicate foot disorders caused pain and discomfort. The resulting changes in leg confirmation might evolve into chronic articular damages.
Udder	Teat lesions Clinical Mastitis	Teat lesion cause acute and chronic pain, which might be aggravated by the daily milking procedure. Clinical mastitis frequently occurs involving pain and discomfort.
Systemic diseases	General condition Clinical Diseases	Clinical diseases typically involved pain and discomfort. The welfare implications vary according to the intensity and duration of the disease condition and welfare the general condition is affected.
Mortality	Case history of culled animals	The information points out specific problem areas in the herd and provides details on the tackling of serious health problems.

Human – Animal interactions and their impact on animal welfare:

Animals coexist with humans in different forms as companions, source of food and fiber, providers of draughtpower, etc. In the livestock production systems, there are regular periods of contacts between humans and animals such as during feeding and cleaning., milking and during treatment related activities. Animal interactions are viewed and performed as a routine viewing animals as economic entities and treating them accordingly. The interactions are of inter species type. Majority of caretakers are not aware of the impact of their handling on the welfare of animals.They do provide food and care to the animals, whichin turn make the animals develop some sort of connection with them, which will have bearing on overall welfare of animals. Human animal relationships are based on meeting the needs of care and food, the two aspects needed for survival. During the interactions, the animal caretakers use several methods of communication. Different verbal and physical means of communication act like stimuli making the animals respond. Animals respond to different stimuli such as tactile, visual, olfactory, gustatory, and auditory stimuli from humans in a way they correlate. Tactile interactions between cattle and humans are important in dictating the cattle's behavioral response and positive tactile interactions have been shown to reduce fear of humans in cattle (Boissy and Bouissou, 1988;).The behavior of stockpersons is an important factor in determining the degree of animals' fear in humans and consequently the quality of the human-animal interaction (Henceforth, etal 1998). Human contacts are unavoidable even with considerable automation in intensive farming, andanimals are still subjected to some degree of human contact. Humans are treated by the animals as foreign species and are afraid of the humans and as the principle of staying away from unknown (Xenophobia) for the sake of survival holds good here also.It has been suggested that animals still perceive interactions with humans as predatory encounters (Boissy 1998) which could elicit a fear response.

Provision of good management alone will not be sufficient in taking care of livestock and avoiding stress, the stockman's behavior also influences the overall welfare of the livestock which can impact production (Edwards-Callaway,2018). Animal behavior will help in identifying the animal's response to external stimuli. Aggressive reactions are reduced by proper handling of animals. Handling in a humane way will elicit fewer stress reactions from the livestock and thus have lower cortisol concentrations,Certain studies determined that stroking in certain areas, particularly the neck, reduced avoidance behavior and stress reactions and increased approach behavior in dairy cattle, providing evidence that positive tactile interactions with humans can make a positive impact on routine handling procedures with cattle (Boissy & Bouissou 1988). Animal temperaments also will have effect on the overall health and welfare of livestock, many factors such as age, genetics, breed, and social environment can impact animal temperament, including previous experience with handlers.

Human-animal interactions play a key role in assessing the welfare of the animals especially at psychological level. Historically, on-farm animal welfare assessments focused mainly on the physical welfare of animals, i.e., are they provided food and water, are the facilities are good, are the animals suffering from disease, etc. With the growing concern for farm animal welfare within society, many consumers began to be interested in understanding about how animals were being raised.Conditions in which the animals raised also has become key point in the marketing of animals and animal products.

Livestock tend to act vigilantly with the people who acted in an aversive manner with them.Some studies were conducted on animal reaction elicited through the fear tests in response to the human presence, which are categorized into 1) distance measures 2) handling measures and 3) a subjective rating of the animal response to the human(Rousing, T., Waiblinger,2004).

Distance measures: The level to which animal approaches or stays away from the handlers is measured (Hemsworth et al., 2000), with an underlying assumption that animals that are most fearful of people will keep the greatest distance. Here animal and

a person are kept together in a limited space and the reaction of the animal is studied.Animals' tendency to approach the person, the distance to which animal will come, time taken to come nearer to the person are studied. Approach distance to a person standing stationarily in the enclosure and the distance that an animal will allow a person to approach are also measured, ("flight" distance).

Handling measures: The response of an animal when handled is measured. Routine handling operations such as milking for dairy cows are also considered to assess the responseto handling (e.g.Hemsworth et al., 2000; Breuer et al., 2000),The responses include behavioralmeasures, such as the incidence of kicking or stepping by dairy cows (Hemsworth et al., 2000; Breuer et al., 2000), running or kicking or escape attempts or even acts of aggression against the handler.

In the subjective assessment of animal welfare, the individual temperament which is an innate quality should also be considered while arriving at the welfare status of the animal.Consistent differences exist in how individuals respond to all environmental conditions and to various stimuli including human handling. Traits of temperament should be well evaluated to understand the relation between animal temperament and welfare.

Human- animal interactions are dynamic in nature & the welfare of livestock need to be assessed periodically. Modification of conditions as per the subjective assessment of welfare keeping the species specific requirements into account may pave a better way for the management improving the welfare of livestock.

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ACARICIDE AND ANTHELMINTIC RESISTANCE: TWO SIDES OF THE SAME COIN

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Acaricides and anthelmintics are two classes of drugs that are widely used in veterinary medicine to control and treat ectoparasites and endoparasites, respectively. However, the emergence of resistance to these drugs is a growing concern, as it poses a threat to the sustainability of animal production and welfare.

Acaricides are chemicals that are used to kill or control mites and ticks. These ectoparasites can cause a range of diseases in animals, such as mange and tick-borne fever, leading to reduced productivity and welfare. Similarly, anthelmintics are drugs that are used to treat and prevent infections caused by internal parasites, such as roundworms and tapeworms. These endoparasites can cause a range of clinical signs, such as diarrhoea, anaemia, and weight loss, leading to reduced productivity and welfare.

Acaricide resistance occurs when ticks and mites become resistant to the acaricides used to control their populations. This resistance develops through genetic mutations that allow ticks and mites to survive exposure to the chemicals. The misuse of acaricides, such as using the same product continuously or not following proper application guidelines, can lead to the development of resistance. As a result, farmers and animal owners are forced to use more potent or different acaricides to control the tick and mite populations.

Anthelmintic resistance is a similar phenomenon, but it occurs in worms. Parasitic worms can become resistant to anthelmintics when they are exposed to these chemicals repeatedly. This resistance can occur in various types of worms that infect livestock animals, such as roundworms, tapeworms, & flukes. The resistance can arise due to genetic mutations in the parasite populations that allow them to survive exposure to the drugs.

The development of resistance to these drugs is a complex process influenced by several factors, including the genetic makeup of the parasites, the drug's efficacy, the frequency and intensity of drug use, and the management practices employed.

Acaricide resistance has been reported in several species of mites and ticks worldwide, including the cattle tick Rhipicephalus microplus, the sheep scab mite Psoroptes ovis, and the poultry red mite Dermanyssus gallinae. Similarly, anthelmintic resistance has been reported in several species of internal parasites, including the roundworm Haemonchus contortus, the liver fluke Fasciola hepatica, and the tapeworm Moniezia benedeni. In both cases, the emergence of resistance has been associated with the widespread and indiscriminate use of these drugs, often at sub-therapeutic doses.

The consequences of acaricide & anthelmintic resistance are significant. The persistence of parasitic infections can lead to reduced productivity, increased morbidity & mortality, & increased costs of treatment. In addition, the use of alternative drugs or management practices can be costly & time-consuming. Moreover, the development of resistance to these drugs is not limited to animals but can also have implications for human health, as some parasites are zoonotic & can infect humans.

Preventing and managing acaricide and anthelmintic resistance is crucial to ensure the sustainability of animal production and welfare. This requires a comprehensive approach that includes the following strategies:

1. **Rational drug use:** Drugs should be used only when necessary and in accordance with recommended doses and treatment intervals. This will help to reduce the selective pressure

on parasites and minimize the risk of resistance. Another strategy is to use combination treatments, where different chemicals with different mode of action are used in combination to control the parasite populations. This approach is useful in delaying the development of resistance since it makes it harder for parasites to develop resistance to multiple chemicals simultaneously.

2. **Integrated pest management:** This approach involves the use of multiple control methods, such as biological, physical, and chemical, to manage pests and parasites. This can help to reduce the reliance on chemical control and slow down the development of resistance.

3. **Monitoring and surveillance:** Regular monitoring of parasite populations and resistance levels can help to detect and respond to emerging resistance. This can help to inform treatment decisions and prevent the spread of resistant parasites.

4. **Genetic selection:** Selective breeding for resistance to parasites can help to reduce the incidence of infections and the need for drugs. This approach can be particularly effective for internal parasites, where genetic resistance can be passed on to offspring.

In conclusion, acaricide resistance and anthelmintic resistance are two sides of the same coin, as they both arise from the same factors and have similar consequences.

- 'World Veterinary Day-2023'. With the blessings of all the gala event of celebration of WVD-2023 at Vigan Bhawan was successful with participation of about 1200 vets across the country. For the frist time WVD was organized by VCI & DADF, GOI also witnessed launch of VCI portal, Minimum Standards of Veterinary Practice Regulation & awards presented to outstanding veterinarians.

- 'Sh. Parshottam Rupala ji', Hon'ble Minister, 'Sh. Sanjeev Balyan ji', Hon'ble MOS, Ministry of Fisheries, Animal Husbandry and Dairying, 'Sh. Rajesh kr Singh', Secretary, Department for Promotion of Industry and Internal Trade, 'Dr. Abhjit Mitra', AHC, 'Dr. B.N Tripathi', DDG, ICAR attended the event.

- The mega event was also attended by Padmashri awrdee veterinarians, IAS, IRS, IFS, IPS Veterinarians, RVC officers, who attended the world Veterinary Day function which added glory to the mega event.

- Congratulations to 'Dr. Satbir Sharma', Assistant Professor, Veterinary Surgery, LUVAS for becoming Mr. India - proud moment for vets.

- For holistic development of our profession State Veterinary Councils (SVC) need to be vibrant. On 13th March 2023 a meeting was held with all Presidents and Registrars of SVCs at Bangalore SVC wherein the following was discussed:

1. Demonstation of One stop e-portal for Vets across the nation.
2. Vibrant SVC along with a mechanism for funding for different activities of SVC including CVE.
3. Unified course curriculum for paravets.

The meeting was also attended by Dr. Abijit Mitra, Animal Husbandry Commissioner.

IVA NEWS

- National Executive meeting of INDIAN VETERINARY ASSOCIATION (IVA) was held on 25-26th Feb 2023 at Trivendrapuram, Kerala. President & General Secretary of almost all state Veterinary Associations were also present in the meeting. President & General Secretary of National Academy of Veterinary Science (NAVS) also participated in the meeting.

- Dr. A. K. Mishra. Ex VC & Chairman ASRB was the chief guest of the meeting.

- It was a vibrant meeting where commitment for professional standards was discussed to a great length.

- The event was hosted by Kerala Government Veterinary Doctors Association.

- Prof. (Dr.) Mahendra Pal who was honoured with Padmashri award in the field of science and technology was felicitatied for bringing glory to the veterinary profession and carrying forward the saga of padma awards to the Veterinarians.

- Dr. Meghana Permmaiah from Dakshina kannada district was profusely appreciated as she showed courage to sit inside a cage and end for being dropped down into a 25 feet deep well to sedate a leopard which was stuck in the well for more than 36 hours.

PANT MORINGA TABLETS: AN INNOVATION FOR HUMAN HEALTH

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Moringa Oleifera, popularly known as the Drumstick Tree, is a fast-growing, non-leguminous tree that is native to India but widely grown in tropical areas around the world. It has earned the name "Miracle Tree" because of its drought resistance, nutritional and therapeutic properties. Moringa oleifera is high in vitamins, mineralsand antioxidants, all of which are important for nutritional and immunological health. It also contains a number of chemical compounds that have been shown to help regulate blood pressure, blood sugar, and cholesterol levels.

An innovative approach of making Moringa oleifera tablets for human beings has been thought keeping in mind the availability of Moringa oleifera trees in limited regions of the world. This innovation will help in the dissemination of the benefits of Moringa oleifera trees to other regions where they don't grow. The campus of G.B. Pant University of Agriculture and Technology is blessed with a rich population of Moringa oleifera trees whose leaves have been used for the innovation of Pant Moringa tablets (PMT) for human beings. These tablets have been standardized in the method of their formation, taste, nutritional status and keeping quality.

The antioxidants like Quercetin present in Moringa help in the fight against chronic ailments. Antioxidants like Chlorogenic

acid help to relieve stress on the body caused by diabetes. Because of its high fiber, magnesium and Vitamin B content, Moringa is believed to help with digestion. It is frequently added to meals as a nutrient supplement for both humans and livestock. Vitamin C, Rutin and Zeatin are the antioxidants present in Moringa oleifera plant which increase immunity in living beings. Hence, this innovation will help in providing these benefits to the people living in the areas devoid of Moringa oleifera trees in a portable manner.

Moringa leaves are an excellent source of many vitamins and minerals. One cup of fresh, chopped leaves (21 grams) contains :

NUTRIENT	AMOUNT
Protein	2 grams
Iron	11 % of the RDA*
Magnesium	8 % of the RDA
Vitamin B2	11 % of the RDA
Vitamin B6	19 % of the RDA
Vitamin A	9 % of the RDA
Vitamin C	12 % of the RDA

**recommended dietary allowances (daily)*

G.B. Pant University of Agriculture and Technology, which was dedicated to the nation on 17 November, 1960 as a rural university based on land-grant pattern, lies in Udham Singh Nagar district of Uttarakhand at 29 N latitude and 79 E longitude at an elevation of 243.8 m above the mean sea level. The campus of the university is blessed with a rich population of trees of Moringa oleifera which are used by the local residents as their own food as well as a source of fodder for their livestock. It was thought that Moringa oleifera should be made available to the humans in a palatable and portable form through an innovation so that they could also benefit from its medicinal and therapeutic properties.

Innovative Pant Moringa tablets (PMT) were made by converting dried Moringa oleifera leaves into powdered form and tablets were made out of the formed powder readily consumable for human beings. These tablets are made as natural and organic as possible without the use of any chemical substances. They have a good keeping quality and taste with a shelf-life of about 1 year.

THE COMPOSITION OF EACH PANT MORINGA TABLET (PMT) MADE IS AS FOLLOWS :

INGREDIENT	AMOUNT
Moringa oleifera leaves powder	400 mg
Starch powder (primary binder)	60 mg
Sucrose (sweetener)	40 mg
Edible coconut oil (as a liquid binder)	0.4 ml
TOTAL	500.4 mg ~500 mg

Picture :Sample Moringa oleifera tablet made in this project

Difference between these tablets and those already available in the market :

There are some positive differences between innovative Pant Moringa Tablets and those currently available at online and retail stores.

ALREADY AVAILABLE TABLETS	Pant Moringa Tablets (PMT)
Preservatives are added	Preservatives are added
Minimum price of Rs. 180 per 120 tablets	Since very less cost of making it, hence price not more than 120 Rs/ 120 tablets.
Bitter taste	Sweet taste, hence more palatable
Chemical coating agents	No coating at all, hence organic

Benefits of Pant Moringa tablets:

- ***TheseinnovativePant Moringatablets lower blood pressure, blood sugar, blood cholesterol and oxidant levels in human beings.*** Moringa leaves have Quercetin which is an antioxidant that helps to lower blood pressure and another antioxidant is Chlorogenic acid which stabilizes blood sugar levels. The Chlorogenic acid found in Pant Moringa tablets may help the body process sugar better and affect insulin too.

- ***These innovative Pant Moringa tablets improve digestion process due to antibacterial properties of Moringa oleifera which supports restrain of the growth of various pathogens, and its huge vitamin B content.*** They also prove positive for the health of skin and eyes of humans due to the presence of Retinol and Ascorbic acid, respectively. They contain high amount of protein which is helpful in protecting skin cells from damage. High antioxidant levels lead to improvement in the eye-health.

- ***These innovative Pant Moringa tablets boost immunity*** since Moringa Oleifera leaves, being high in antioxidants such as vitamin C, kaempferol, caffeoylquinic acid, zeatin, quercetin, rutin, chlorogenic acid, and beta-sitosterol, helps in controlling inflammation which protects the cells which in the end helps improve the immunity level of an individual. The tablets also help in reducing inflammation due to the presence of isothiocyanates, which are the main anti-inflammatory compounds in *Moringa oleifera* leaves.

These innovative Pant Moringa tablets curb protein deficiency of the body due to the presence of high amount of crude protein and amino acids and also help in weight managementdue to the presence of Moringa isothiocyanates (MICs), which is an active ingredient found to improve thermogenesis and reducegluconeogenesis.

Pictures : Sensoryevaluation of Pant Moringa tablets

2. INNOVATIVE ARTIFICIAL MILK SUCKLING DEVICE FOR PIGS

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The technology was developed keeping in view the mortality of piglets under field conditions in Deptt. of LPM at GBPUAT, Pantnagar. Artificial milk suckling device is preparedusing locally available materials. Under normal circumstances approximately 20% of piglets born do not survive up to 3 weeks of age. The competition between newborn piglets for access to functional teats on the sows is a significant contributing factor to pre-weaning mortality. Also, a sow is unable to nurse her entire litter for many reasons. Then, if the mortality of piglets are to be prevented, then some artificial feeding means must be adopted, as fostering is laborious and foster sow does not accept the orphan piglets. ***It is at this place innovative artificial milk suckling device for pigs assists in piglet management.***

The primary characteristics of this device are as follows:

1. ***Innovative artificial milk suckling device*** is economical as it is prepared from locally available materials.

2. The height of the innovative suckling devices as well as the volume of milk intake can be adjusted as per their needs and requirement, as piglets' milk intake increases with their growth but the natural sow milk production decreases, which can be

overcome through this suckling device and hence piglets achieve their optimum growththrough this suckling device.

3. It is very easy to supplement vitamins and mineralssuch as ironin milk, which is very much required by fast growing piglets to overcome piglet anaemia.

4. Under conventional system of weaning, a sow can produce 1.5-2 litters annually but using this artificial suckling devices sow can produce upto 2.5 litters annually when weaned on the 10th day, hence the economic return to the farmer is high. This is a low input and high output innovative technology and has huge potential for enhancing piggery production.

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