Ilkogretim Online - Elementary Education Online, Year; Vol 20 (Issue 4): pp. 2677-2681
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2021.04.306

Cow Dung for Sustainable Development

Dr Sanjna Vij, Assistant Professor, Amity University Haryana
Ms. Rashi Dubey Mishra, Assistant Professor, Amity University, Kolkata

Abstract: Cow dung is a widely accessible and economical source of biomass in India. Traditionally, cow dung is often used as a mosquito repellent, and there are several occasions during which people perform special rituals with it, including Holy festivals and auspicious religious ceremonies. There are new and innovative applications for the use of cow dung bacteria in biofuels and sustainable chemical management. This review focuses on recent research that is conducted in various fields such as livestock, agriculture, business, and the laboratory.

Keywords: **Cow dung, Pest repellent, Biogas, Manure**

I. INTRODUCTION:

According to the Asian Review, cows have been revered in India for thousands of years not just because of culture, but also for both practical and learned purposes. According to adherents, cow has been elevated to the status of Goddess or mother. Cow is sometimes referred to as “Dhan Lakshmi or Gau Mata” i.e., the Goddess of Plenty. Also, the one great advantage of a cow is that it provides high-quality nutrition and calcium, and can help you stay possibly the best. For people in India, cows have more than one significance, not just generating milk but also money. To all, the dung and urine of a cow is deemed a valuable resource. Nearly two-thirds of the population in India reside in rural areas. One of India's fathers, the great visionary Mahatma Gandhi, said, " The future of India lies in its villages." We can visit any village in India and find the houses and the roads will be encrusted with brown waste matter (or dung), painted with mud, which seems unappealing at first but does even more for the environment.

Dung patties dry on the wall of a coal-fired brick oven. They're rolled into cakes, then stuck on the wall with the smack of a hand, leaving an imprint. John W. Poole/NPR

Dr. Laxmi Narain Modi in his presentation for the Livestock Policy Perspective 2020, held in India, was quoted as saying: "Dung and urine from cows and bulls (cattle) are essential for organic manure (OM) which is used in the construction of new houses, frequent coating of floors and walls of mud houses to protect from insects, and as a base for bio-gas programs. There are innumerable other uses for traditional medicines.".

1.1 Cow Dung Ingredients:

Cow dung is simply the undigested remains of previously eaten food content excreted by herbivorous bovine animal organisms. It is a 3:1 combination of faeces and urine and is mostly composed of lignin, cellulose, and hemicelluloses. Additionally, it includes 24 minerals such as nitrogen and potassium, as well as trace amounts of sulphur, iron, magnesium, copper, cobalt, and manganese. The indigenous Indian

cow also contain higher amount of calcium, phosphorus, zinc and copper than the crossbreed cow (Garg and Mudgal 2007; Randhawa and Kullar 2011). In India, 69.9 % population resides in rural areas (The Hindu 2011), where cow (Bos indicus) is major cattle and generates 9–15 kg dung/day (Werner et al. 1989; Brown 2003)

1.2 Traditional Paybacks of Cow:

In the whole world, cow dung seems to be a relatively economical and easily available biomass. Folks in India have found, over millennia, endless usages of cow dung as a:

- agent of purification,
- combustion as a source of energy(fuel),
- insectifuge,
- villagers' affordable homes building,
- building it with mud-plastering to keep out bugs and other rodents
- over everything, to turn ancient Ayurvedic remedies into effective ones.

Involved in nearly all the ceremonies, cow dung cakes are in abundance. Since the cow manure is combined with pure ghee in the bonfire, especially in the Havans or yagyas it helps clean the atmosphere while also purifying it, it is a useful supplement in making an eco-friendly fire. Said in Ayurveda, it can remove all environmental pollution, too. Even, according to Ayurveda, it is capable of cleansing all the environment.

1.2 Agriculture handling:

Scientists have discovered that fresh cow dung can be used in many ways, including agriculture, in the treatment of certain diseases, and in the production of fertiliser. A community of microbes exist in cow droppings which benefits humans due to the diverse metabolites it can produce. Cow dung microbes have the capability of increasing the productivity of soil via the solubility of phosphates. More and more organisations are examining the cow dung bacteriums to study for creating biofuel and removing pollution. In India, biofertilzer, manure, pesticide, and biopesticides are commonly used along with cow dung to work on agricultural land; the end result, cow dung, serves as a soil conditioner. It provides an effective replacement for chemicals, which speeds up development. The transition from chemical fertilisers to these natural materials may be easily accomplished because of its superior performance. Therefore, another reason has been discovered that cow dung is good for the land as extensive farming does not only work well with synthetic fertilisers, but also with fresh manure because cow dung provides rich organic matter and fertility.

1.4 Medicine handling:

Cow dung is very productive and fruitful manure for dropping the contagious bacteria and fungal pathogenic disease. It showed positive response in suppression of mycelial growth of plant pathogenic fungi like Fusarium solani, F. oxysporum and Sclerotinia sclerotiorum (Basak and Lee, 2002). Investigation was done by Abawi and Widmer (2000), Akhtar and Malik (2000) and Gamiliel et al. (2000) and reported that organic manure reduce disease incidence caused by a wide range of plant pathogens including bacteria, fungi, and nematode species.

According to Ayurveda, cow dung act as a disinfectant. Comprehensive research of cow dung and cow urine are gaining attention around the world. Therefore, efforts are being made for using its potential in the field of pharmaceutical products, manufacture, and energy. Scientists are also trying hard to find a possibility to apply cow dung in areas such as energy, agriculture, the environment, and medicine. There are a diversity of cow dung and cow's urine outcomes, that can be implemented as nourishments and pest repellent in agricultural practices. These products are very popular and are being used day by day. Low soil fertility is one of the greatest biophysical constraints to production of agroforestry crops across the world (Ajayi, 2007). Cow dung manure and vermicompost lifts soil organic matter content, which helps in improving water penetration and water holding volume. It is the most effective and eco-friendly organic energy properties. By using cow dung cakes or biogas we can replace the dependency over ashes, firewood, brushwood and fossil fuel, etc.

If the implementation of cow dung is done in a right and sustainable way, it can expand the output of crops and lessen the risks of bacterial and fungal pathogenic disease. Undeniably, cow dung is the most vital cause of bio-fertilizer and it has also found that cow's urine, horn, and a dead body of a cow can also be used for preparing efficient bio-fertilizer. But due to increasing population pressure and demand of food resources, there is a need of introducing a chemical fertilizer, pesticides and insecticides to the soil, which are disturbing the soil physio-chemical properties including soil texture, porosity, and water

holding capacity and also disturbed the soil microbial population. Therefore, improper use of cow dung should be stopped and should only be applied in the farmland instead of chemical fertilizers, so that the productivity and sustainability of soil could be maintained which will increase the production capacity of food treasure (Bargali, 2004).

According to Indian ayurvedic tradition, cow urine helps the body while often treating viral or chronic illnesses. A good a glass of cow's urine should be taken on an empty stomach each morning for cures such as cancer, indigestion, and diabetic complications, according to Ayurveda. Thus, Ayurveda claims that cow's urine is used to treat all illnesses and it is said to wash toxins and viruses from the body, inside to the outside. A number of companies that produce Ayurvedic-based remedies have started marketing purified cow urine as well. They claim it as well that cows' urine should be used to produce cleansers, soap, shampoos, and other beauty products. The only testimonial in Ayurveda can provide to is of is about consuming cows urine, but there is no empirical evidence to support this statement.

According to Shravan Kumar Garg, Chairman of Haryana, Gau Seva Ayog said that "We are underway to develop 'panchgavya', which constitutes five products offered by a cow-- cow-urine, milk, curd, ghee and cow-dung, that is capable of curing any disease in humans." And hence, it is being more widely accepted as a remedy due to recent and upcoming advances in research and development.

The numerous strategies for using cow urine, that are subject to extensive research by scientists, can be found in Table 1

Diversified Cow Urine Utilization

SN	Cow Urine Utilization as	SN	Cow Urine Utilization as
1	Anti-bacterial	10	Bio enhancer
2	Antifungal	11	Chemotherapeutic potential
3	Antiviral	12	Anticancer
4	Anthelmintic	13	Immunomodulator
5	Insecticide	14	Antidiabetic
6	Fertilizer	15	Antioxidant
7	Antiseptic	16	Antimicrobial
8	Wound healing	17	Plant growth enhancer
9	Multi drug resistant	18	Lipid lowering activity

Table 1: Source: Acta Scientific Pharmaceutical Sciences (ISSN: 2581-5423), Volume 3 Issue, 8 August 2019

1.5 Industry handling:

To make the best of all available manure from any cow in the country, the Japanese manufacturer Toyota aims to use it in renewable-energy projects. This is an enterprise proposal for a methane recovery facility at the Port of Long Beach in California in the U.S., using livestock manure as a fuel. And low-powered household appliances such as refrigerators and water heaters have utility applications, and even can be used to fuel low-emission automobiles. *"We understand the tremendous potential to reduce emissions and improve society,"* Doug Murtha, the executive vice president of Toyota's North American Group, was reported as saying. Renewable electricity generation, which is expected to be turned on next year, would likely be the first around the globe to be in a commercial operation that generates 100% renewable energy. Developing one of the world's biggest hydrogen filling stations would be another advantage.

Relevant microbes inhabit a wide region of the surface of all dung. The further advancement of cow dung microbiota will greatly affect sustainable farming and the rise of the fuel burden on the world's energy resources. This makes cow dung the most versatile biomass, but it is hardly put to use in the manner it deserves. It just, sadly, is not put to good use on an equitable basis. In the recent attempt to cope with 45-degree sun, a vehicle in Ahmedabad was painted entirely with cow dung to stop it from getting wet, while also improving engine performance and emission.

Car covers with cow dung

Due to the massive unaddressed need for more creative innovations concerning cow dung, it is clear that forthcoming work in this area is absolutely critical for the advancement of sustainable growth.

II. CONCLUSION:

The microorganisms produce various enzymes from this environmentally friendly source can be used in a plethora of implementations such as in agriculture, bioscience, chemistry, and biotechnology. Of course, even further analysis and analysis on cow dung is needed along with science and technology, as there are so many unknown aspects to be explored for the advancement of medical and industrial purposes, and possibilities of advanced manufacturing of antibiotics as well as enzymes. Furthermore, cow dung can perhaps be thought of as a valuable natural resource that has great long-term possibilities. Future generations would think of dung in the same way, and cow manure should be deemed a quickly procured, limitless resource that has great vision for viable development. We should consider it as a source of readily available bioenergy that is well poised for renewable use in the future.

REFERENCES:

1. Abawi, G.S. and Widmer, T.L. (2000) Impact of soil health management practices on soil borne pathogens, nematodes and root diseases of vegetable crops. Applied Soil Ecology 15: 37-47.
2. Ajayi, O.C. (2007) User Acceptability of Sustainable Soil Fertility Technologies: Lessons from Farmers' Knowledge, Attitude and Practice in Southern Africa. Journal of Sustainable Agriculture 30: 21-40.
3. Akhtar, M. and Malik, A., 2000 Roles of organic soil amendments and soil organisms in the biological control of plant – parasitic nematodes, a review. Bioresource Technology 74: 35-47.
4. Bargali, S.S. (2004) Cow Dung Burning is a great to Sustainable Agriculture. National Seminar on Ecology and Environment Management: Issues and Research Needs, Department of Botany, Kurukshetra University, Kurukshetra
5. Brown RC (ed) (2003) Biorenewable resources—engineering new products from agriculture. Lowa state press, London
6. Garg AK, Mudgal V (2007) Organic and mineral composition of Gomeya (cow dung) from Desi and crossbred cows—a comparative study. Int J Cow Sci 3:1–2
7. Randhawa GK, Kullar JS (2011) Bioremediation of pharmaceuticals, pesticides, and petrochemicals with gomeya/cow dung. ISRN Pharmacol. doi:10.5402/2011/362459
8. The Hindu (2011) About 70 per cent Indians live in rural areas: Census report. http://www.thehindu.com/news/national/about70percentindiansliveinruralareascensusreport/article2230211.ece. Accessed 24 Jul 2015
9. Werner U, Stöhr U, Hees N (1989) Biogas plants in animal husbandry. Deutsches Zentrum für Entwicklungstechnologien-GATE

10. https://www.actascientific.com/ASPS/pdf/ASPS-03-0360.pdf
11. https://www.prnewswire.com/news-releases/toyota-to-build-the-worlds-first-megawatt-scale-100-renewable-power-and-hydrogen-generation-station-300564156.html
12. https://www.wbur.org/npr/461907258/youve-got-dung-amazon-is-delivering-cow-pies-in-india
13. https://indianexpress.com/article/trending/trending-in-india/car-owner-plasters-vehicle-with-cow-dung-to-keep-it-cool-5739830/