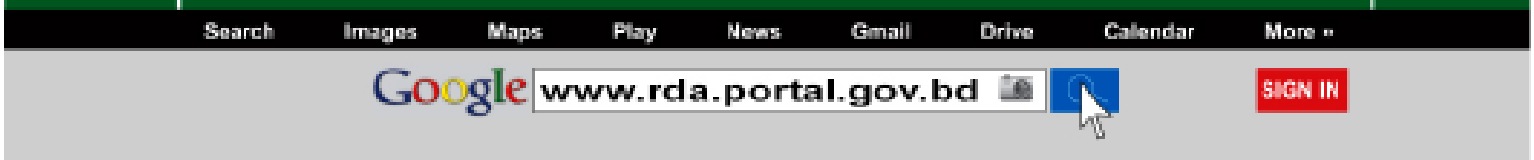
Green Innovations of RDA



Rural Development Academy. RDA. Bogra

Rural Development and Cooperative Division

Ministry of Local Government, Rural Development & Cooperatives

Bangladesh

Green Innovations of RDA

This resource book has been prepared by RDA based on the findings of extensive action research.

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Concept, design and editing
AKM Zakaria/Director, RDA
Zakaria.rda@gmail.com

Content contributors
M A Matin
AKM Zakaria
Mahmud Hossain Khan
Md. Abdullah Al Mamun
Md. Nazrul Islam Khan
Samir Kumar Sarkar
Md. Ferdous Hossain Khan
Md. Khalid Aurangozeb
M. Abid Hossain Mridha
Rebeka Sultana
Shubhagata Bagchi &
Md. Jafor Sadek

Computer work
Md. Monirul Islam
Md. Kamrul Islam
Md. Hedayetul Islam

Photography
Mohibul Alam
Rubo Lodi

Graphic design
Ahsan Ullah Khan
Md. Sirajul Islam

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e-mail: bimurto_ad@yahoo.com

Contents

Rural Development Academy (RDA), Bogra, Bangladesh

Rural Development Academy (RDA), Bogra sailed its journey in June, 1974 as a specialized national institution for training, research and action research related to rural development in Bangladesh. As a knowledge based institution, RDA is already on steady stride upholding its motto 'Green Initiative' for development and dedicated to play significant role in national rural development arena by innovating rural development models and HRD initiatives, therefore, well-known as gate-way to rural development in Bangladesh.

wi-fi zone

Green Campus of RDA

RDA is located 16 km away from Satmatha, the vibrant heart of Bogra City by the Asian highway towards Dhaka. RDA Campus covers an area of 48.50 ha. Besides office and residential buildings, a large part of the campus (29.50 ha) is under demonstration farm, nursery, herbal garden, play ground, laboratory school & college etc. The well planned campus surrounded by villages with almost all modern amenities of urban life. It's quite and serene environment offers a very congenial academic and research atmosphere. Pollution free, rich biodiversity, picturesque surroundings with lake, over hanging trees alive with chirping of birds and lush green rice fields, splendor of the panoramic beauty of RDA- all these make the campus-ever endearing to the ever young-the green campus.

Training	Research	Advisory Services	Action Research
RDA facilitates, organize and provide training as major mandated functions to create a cadre of professionals in the field of rural development	RDA mainly conducts problem identifying as well as solving and evaluation type research on various socio-economic and agricultural development related issues and publishes research reports	RDA provides advisory services in formulation, implementation and evaluation of rural development policies and programmes	RDA as its' mandated function conduct action research to evolve replicable rural development models covering a wide range of areas related to agriculture and rural development

MANAGEMENT OF RDA

The Rural Development Academy is an autonomous Institution officiated with the Rural Development and Co-operative Division of the Ministry of Local Government, Rural Development & Co-operatives (LGRD&C). It is governed by a Board of Governors. Rural development is multi-disciplinary in nature and the faculty of the academy constitutes of different academic disciplines. The Academy has a strength of 304 personnel including 61 Faculty members.

BOARD OF GOVERNORS (BOG)

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CENTRES OF RDA

From its inception RDA has identified and given emphasis on irrigation and water management as one of the core area of rural development. Considering its continuous success in those areas, RDA has established the Center for Irrigation and Water Management (CIWM) in 2003. Observing the success of CIWM, the following six new centers have been established in 2012 after having approval of the BOG of RDA.

- Char Development Research Centre (CDRC)
- Seed and Biotechnology Centre [SBC]
- Cattle Research and Development Centre [CRDC]
- Renewable Energy Research Centre [RERC]
- Community Development Centre [CDC]
- Palli Pathshala Research Centre [PPRC]

Green Innovations of RDA

M A Matin
Director General
RDA, Bogra, Bangladesh
e-mail: mamatin633@yahoo.com

The emerging issue of green economy was particularly highlighted in Rio+20 global summits. Greening of economy is in its early stage in Bangladesh. Innovation, research and demonstration will play pioneering role. It is unlikely that all these green innovations of RDA will emerge as a mass scale phenomenon, but there are strong cases for initiating good examples that it is in the realm of reality and possibility. This can only be undertaken by demonstrating commitment, dedication, significant investment and willingness to be a pioneer and innovator. Such rare but praise worthy examples are the green innovations of RDA where the principles of 3R i, e. reduce, reuse and recycle are inherent in the planning process.

Low-cost DTW (Borehole) and its Multipurpose use for Sustainable Development

Financed by: GOB

Deep Tube well (Borehole) was first introduced in Bangladesh for irrigation in early 1960s. The installation cost of a Borehole was high due to expensive boring technology (Hydraulic rig based) and costly materials (MS/GI/fiber glass pipes, stainless steel/fiber glass strainer etc.) and was not demand based. The cost of Borehole was born by the donor agencies and given to the farmers on rental basis to subsidized price. The installation cost went beyond the affordability of farmers when subsidy was withdrawn after 1990s. The Borehole installed for irrigation remains in use only for four months a year to irrigate Boro rice. The rest of the time it remains idle. As a result, the investment was not profitable for farmers and others.

On the other hand access to safe drinking water is as always inadequate in Bangladesh. Average per capita use of water is only 45 liter/day. General people are also unable/ unwilling to pay water charge for drinking and domestic purposes. Rural livelihood in Bangladesh depends on agricultural activities (poultry and livestock rearing, horticulture, fish farming, food processing, etc.) which need adequate safe water. Due to inadequate water supply facility in the villages they cannot involve in the above activities. Consequently they don't have enough income to pay for all the family expenses including domestic water. In urban water supply system government is providing huge subsidy but there is no such provision for rural areas. Moreover, the group ownership and management system of Borehole was not well defined which resulted social conflicts and chaos. Consequently, the schemes failed to attain sustainability.

01 The Green Innovation

RDA developed manually operated drilling technology and use locally available low cost materials (MS/uPVC/Cement Concrete pipes, uPVC/Bamboo net strainer etc.) makes the system low-cost. The capacity of the pump and prime mover (motor) has been harmonized with farmer's demand makes the system affordable.

Multipurpose use of Borehole

02 The Green Innovation

The model- Multipurpose uses RDA-developed low-cost DTW (Borehole) ensures year round utilization as well as extending its multipurpose uses make the investment profitable. When water is used only for drinking and household purposes, villagers have to pay the water charge from their current income/ and savings. When water is used as a input of production (e.g. crop cultivation, horticulture, nursery, poultry, duck farming, guttery, dairy, fish culture, homestead gardening, hotel/restaurant/tea-stall businesses, small & cottage industries and other IGAs), the villagers earn additional income that enables them to pay water charge. With the multipurpose uses, training matched RDA credit helps them to pay water charge and makes the system sustainable.

RDA introduced well-defined ownership including individual/NGO or farmers' group to make the system sustainable. The individual/ NGO/ groups/ private entrepreneur shares profit and bear management cost on the basis of investment contribution.

Impact

Farmers can afford RDA-developed Borehole due to the reduction of 30-40% installation cost compared to the traditional Borehole. It uses locally available materials and thereby saving the foreign currency.

It ensures multipurpose productive use of water throughout the year and creating investment enabling environment.

Per capita water use at the project area boosted up to 60-120 liter/day compared to the national average of 45 liter/capita/day.

Villagers' access to safe water supply (about 2-3 hundred households in a project sites) ultimately improves their livelihood. Productive uses of water ensure additional income at the village level therefore helps in improving socio-economic condition of the villagers.

Peoples become willing to pay the water charge as their additional income is ensured by the training matched credit on various water based income generating activities and make the system more sustainable.

This technology establishes village level private entrepreneur/water supply group for supplying safe water in multi sectors without any subsidy from the government.

Being a demand based technology reduces the trend of ground water depletion is therefore, claiming as an environment friendly groundwater development technology.

Rural piped water supply was ensured by the farmer's operated water supply system and become the best option for uninterrupted safe water supply.

Efficient use of Water Resources for Agricultural Production in Bangladesh

Financed by: GOB, IRRI, Cornell University-USA

In Bangladesh irrigation coverage is about 54% to the total arable land. Due to unavailability of surface water in dry season 75% of irrigation water comes from ground water storage. Rice is an aquatic plant, need 3-4 m. ton of water to produce one kg of rice in Bangladesh.

Generally, in Bangladesh most of the irrigation channels in farmers' field are traditional earthen channel. A portion of land is used to construct channels where more than 50% irrigation water is being lost. The national coverage per Borehole having capacity of 200 m. ton/hr is only 16 ha. Moreover, social conflicts being a common phenomenon for aligning earthen channels and channels to be maintained every year that incurs huge cost.

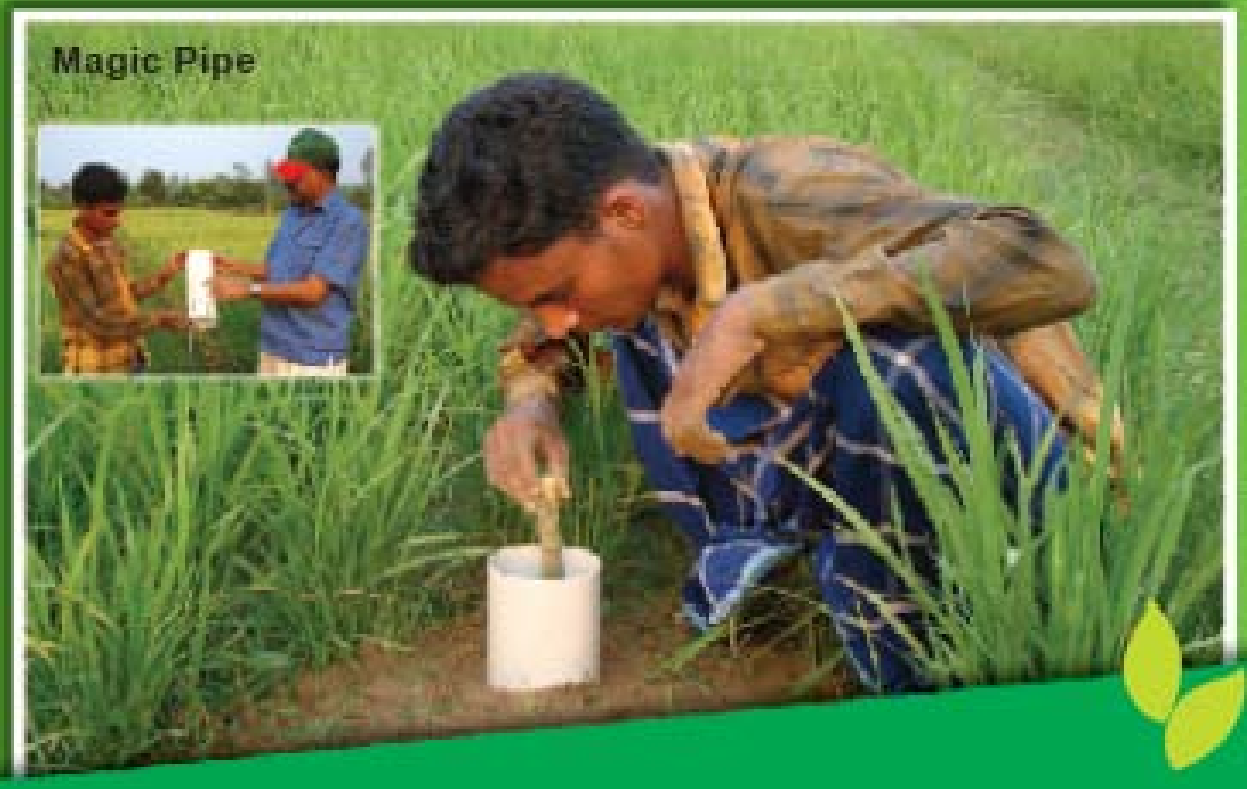
The traditional inefficient irrigation technique and conveyance system compels enormous quantity of ground water extraction. In rice fields farmers like to have flooded irrigation with an appreciable depth of at least 5cm. Continuous flooding creates deficiency of micro-nutrients in rice plant. Rice is our staple food, we don't have any other alternative to move on rice production but improve the farm level water management.

The above causes also result continuous depletion of groundwater level, presence of arsenic and environmental imbalance.

Buried Pipe Irrigation

03 The Green Innovation

Buried pipe irrigation is an efficient water conveyance system under low pressure, where pipes are placed at one meter depth from the surface level. A header tank is used to maintain the low pressure and distribution structures are constructed about 100-200m apart depending on the farm holdings. Introduction of buried pipe irrigation system increases command area and conveyance efficiencies up to 67 hectares and 95% respectively reduces land loss and social conflicts as well as can irrigate from lower to higher elevation.



04 The Green Innovation

Magic Pipe is a piece of 12 inch plastic pipe and even a used plastic bottle with reasonable diameter of which half portion is perforated and that part is penetrated in to the soil in rice field helps to observe the presence of soil-water adequate for rice crop. The practice reduces the quantity and frequency of irrigation by allowing drying to a degree, and then re-flood in a cyclic order is the basic principle noticed as alternate wetting and drying (AWD). It reduces irrigation cost without imposing any extra cost of production and increases rice yield. RDA has developed this technology in collaboration with IRRI.

05 The Green Innovation

Raised bed is a form of conservation agriculture as well as water saving technology where crops are planted/broadcasted on raised bed and water supplied through the furrows. The beds are permanent, can easily made by a machine, reduces irrigation water, nutrient leaching and conserve soil fertility. Raised bed helps to develop plant root system and facilitate border effect for each and every plant by making passages for wind and sunlight. The raised bed farming saves irrigation water, enhances fertilizer use efficiency due to local application and thereby increases crop yield. RDA has developed the raised bed technology in collaboration with Cornell University, USA.

Buried pipe: The buried pipe irrigation model increases command area of a borehole (200 m. ton/hr) four times from 16 to 67 hectares which is ever highest in Bangladesh. The model reduces land loss used for construction of irrigation channels and ensures conveyance efficiency more than 95%. It reduces the social conflicts usually happens for water distribution an channel alignment. As a result, savings of ground water resources could be possible from 800 m. ton/hr to 200 m. ton/hr and power from 80 kW to 20 kW. This helps to protect environmental aspects of ground water resources as well as water quality and thus avoiding load shedding during crisis period. It reduces operation and maintenance cost.

Maglo pipe: Continuous flooding in rice field results extraction of huge quantity of water and soil nutrient goes beyond the reach of the root zone of rice plants. On the contrary, alternate wetting and drying (AWD) creates narrow cracks on the soil surface - helps in growing root system and at the same time makes nutrient more available. Combined influence of all those benefits- the overall production increases. It means, gaining, in rice production at the same time minimizing cost. During Boro season there is always huge shortage of electricity. Adopting Maglo pipe in Boro season, US$ 100 million would be saved in terms of saving imported diesel in a single season. In the same way, if we consider electricity as the source of power supply US$ 66 million worth electricity would be saved in one crop season out of 4.5 million ha Boro cultivation. Moreover, there would be about 200 kg/ha additional production of Boro rice worth US$ 125 million.

Raised bed: The raised bed farming reduces irrigation water, fertilizer inputs and increase crop yield. Permanent beds offer the opportunity to reduce tillage cost and rebuild soil structure as well as soil organic matter. Raised bed farming is traditional for potato and vegetables etc. but new for rice. The advantages associated with raised bed technology of rice production reduces the irrigation water by 43%, increases rice yield by 18-20%, reduces N fertilizer by 22%, reduces production cost, acts as buffer against drought and flood (climate change) and reduces Arsenic accumulation in crops to some extent.

Community Bio-Gas Plant for Production of Renewable Energy and Organic Fertilizer in Bangladesh

Financed by: GOB

Bangladesh has been facing severe crisis as fuel security sometimes considered synonym to food security. It has been next to impossible to meet up the yearly demand of 40 million tons of fuel from natural sources. About 90% electricity is generated using natural gas. Government has to spend a huge share of development budget to meet up the subsidy incurred for importing fuel. Rural people depend on homestead forestry for cooking which leads deforestation. The stock of natural gas is supposed to be exhausted by 2030. The country's environment, food security, agricultural production and livelihood are being adversely affected under the circumstances.

On the other hand electricity generation is inadequate and meets only 35% of total requirement. It becomes a financial burden for the government to give subsidy for supplying electricity in vast rural areas.

The other challenges include losing soil fertility due to inadequate organic matter. In Bangladesh soil contains less than 1% organic matter far below than the optimum level of 5%, which is alarming for soil health. Moreover, there is poor waste management causing environment pollution and diseases for man and animal. The community bio-gas may be one way of addressing the above challenges.

06 The Green Innovation

In Bangladesh traditional biogas digester has capacity of 3-6 m^3 at individual household level which incurs many technical difficulties, inadequate supply of cow dung, improper operation and maintenance. It was not also economically viable. Traditionally, only the cow dung was the input of biogas digester but in community approach all degradable waste generate at village level i.e. farm waste, kitchen waste, market waste, sewerage waste etc. used as inputs for biogas generation.

07 The Green Innovation

A new approach of community based biogas model (capacity of 150-200 m³ digester) has been developed for waste management as a source of alternate energy in cooking, generation of power as well as CNG Conversion and production of best quality organic fertilizer.

Raw biogas is collected by a truck mounted gas tanker (10 m³) under 20 bar pressure from community biogas plant located in 112 villages throughout the country. The raw biogas is firstly stored in balloons/tankers as buffer storage. The raw biogas is purified (remove CO_2, H_2S and moisture etc.) in mother station located at RDA. In purified biogas methane content raised up to 97% and store in a purified gas tanker (20 m³) under 20 bar pressure as buffer storage for its multipurpose use (electricity generation, supply to the gas line for cooking and supply to the vehicle under 200 bar pressure as CNG).

Impact

Community biogas has created lot of interests among the policy makers, development planners and common people of Bangladesh considering a source of renewable energy and better management of decomposable wastes. Managing of waste is a big concern. Improper handling and management of waste is also a big challenge. Community approach biogas plant can ensure better waste management as well as adds value and creates positive impact on rural society.

Community biogas is used as alternate source of fuel energy for household cooking. As a result savings of fuel wood reduces deforestation and appears safeguard of village women against health hazard issues.

Employment generation and additional income have been ensured in village level through production of organic manure and biogas marketing. Quality organic manure produced from biogas plant improves soil health. The proper waste management keeps rural environment sound and clean by reducing harmful carbon emission.

Purified biogas is used for electricity generation and inject to vehicle substitute for CNG can reduce additional pressure on national power grid and saves costly foreign currency.

Multi-Storied Agriculture with Solar Power Irrigation

Financed by: RDA

Rapid population growth, increasing food demand and urbanization are the main causes increased pressure on scarce resources in Bangladesh to support food security of ever growing population. One of the lowest land-person ratios (0.12 ha) in the world (FAO, 2001) Bangladesh is loosing 1% of cultivable land every year. Horizontal increase of production is nearly impossible due to limited cultivable land area. For this reasons consideration of vertical expansion of crop production should be the main concern. Moreover, unilateral rice cultivation is no more profitable for the farmers of Bangladesh. In irrigation period the demand of power supply increases up to 40% which is causing huge load shedding all over the country. Evaporation is also high in this dry season. Introduction of solar power can helps to improve the situation. Traditionally, installation of solar panels requires large land area that reduces the highly needed cultivation area.

08 The Green Innovation

Abundant sunshine in Bangladesh is a blessing of nature which can be exploited to increase agricultural productivity in multiple ways. Combining knowledge and wisdom of agronomy and astronomy the concept of two storied cropping system has been evolved which can efficiently drive the non profitable rice cultivation to a profitable enterprise in eco-friendly manner. It has been estimated that the present cropping intensity of Bangladesh is about 180%. But the two storied cropping model can increase the intensity by double and even triple. Moreover the cropping system requires zero or no electricity as the top layer is furnished with solar panel for lifting ground water for irrigating rice as the base crop and cucurbits vegetable as second crops. Moreover the two storied agriculture with solar irrigation system minimizes load shading, evaporation and creates less pressure on national power grid. Water saving technology developed by RDA i.e. Magic pipe (AWD) and Raised bed technologies are preferably used in the two storied agriculture model.

09 The Green Innovation

The new innovation of two storied agriculture with direct solar irrigation system minimizes pressure on national power supply grid and load shading. Solar panel harvests sunshine (as 3rd layer crop) and generates power for lifting ground water using direct sunshine and reduces the electricity consumption and irrigation cost (operating cost) to almost zero.

Women in Seed Entrepreneurship [WISE]

Financed by: IFC- The World Bank Group

Value of quality seed is well established for better crop production, but lack of adequate supply and availability is one of the greatest impediments in Bangladesh. Seed supply by formal sector is limited, compared to the total requirement, thereby contributing to a huge yield gap. The formal seed sector is able to meet a maximum of about 20% of the total requirement and farm-saved and/or farm-traded seed continues as the dominant source of seed In traditionally, farmers in Bangladesh grow crops for consumption and/or commercial purposes and rural women save a portion of the crop as seed. Much of these seed are contaminated and not produced following proper seed technology. Continuous use of such poor quality seed is leading to declining yields and national food security is becoming an issue.

10 The Green Innovation

Final destination of all crops and seed is the home where rural women manage the seed and the crops. Thus from time immemorial rural women became the custodian and dominant source of seed and genetic resources, contributing extensively to the improvement of local seed system in Bangladesh and in other South Asian countries. But they lack access to seed technology; their invisible roles are undervalued in formal statistics and usually overlooked by formal research and extension system.

Considering the importance of those knowledge as valuable resource, RDA has collected, validated and documented several women friendly seed technology through extensive action research in a Bangladeshi village-Maria, and branded the model after the name of the village the Maria Seed Technology Model- the first step towards wise.

11 The Green Innovation

Rural women in Bangladesh are highly involved in agricultural activities. But their roles are undervalued in official statistics and are usually over looked by formal research and extension system. They are excluded from the market place and their male counterparts deal with all sort of economic transactions. Rural women are always the caretakers and primary source of good quality seed. They contribute significantly to the improvement of local seed system both in Bangladesh and South Asian countries. However, even this critical job is considered as marginal and support function and men continue to dominate the seed sector. To transition into entrepreneurial roles these women require recognition, resources, market accessibility and a shift in perception.

Women in Seed Entrepreneurship (WISE) is a rural development model developed by RDA- that works to accelerate progress in improving supply of quality seed by exploiting and enhancing the synergies among rural women's contribution, seed technology and overall women centered seed system. WISE examines how rural women can be energized to become a more powerful tool to tackle the persistent problems of seed security of the country. The concept reflects objectives of MDGs and the vision- 2021 of the Government of Bangladesh. While, WISE contributes to the achievements of all those objectives, its primary focus is empowering rural woman and improving supply of quality seed.

The ultimate long term impact of multistoried cropping system is to reduce poverty and improve livelihood of farmers and limit dependency on ever crying electricity for irrigation.

Effective utilization of abundant sunshine for irrigation farmers can produce, sale and consume paddy and vegetables on the same piece of land round the year. Adoption of this system can increase cropping intensity from 180% to 360% and even 500% in Bangladesh. Rural Development Academy, Bogra has conducted research on multistoried cropping system keeping rice as the base crop and bottle gourd as the 2nd layer crop and solar panel for irrigation on the top layer during Aman season and continuing in current Boro season. The calculated gross additional income was US $ 1400 from one hectare of land where rice yield was not significantly decreased compared to unilateral rice cultivation. Deducting the cost of trells and other operational cost, net additional income of US $ 1250 was obtained from one hectare of land by applying multistoried cropping system of RDA.

The results from WISE initiative demonstrated great potential for women to be at the forefront of all the activities within seed production, processing, preservation and business. The women have demonstrated effective knowledge adoption, improved production practices and secured higher income after getting involved in seed business as seed micro-entrepreneurs. RDA branded the research product as WISE Model. As a result of motivation, skill development and market linkage more than ten thousand women are now enjoying sustainable engagement in the seed sector as micro entrepreneurs. They have achieved higher standard of seed purity, germination capacity and moisture content comparable to the national seed certification standard. Initially the women form small groups in villages which later on operate at association level. Upgrading women's group into association level the women have a stronger voice and capacity to negotiate and operate seed business beyond their community market boundaries and sensitize other women in their neighborhood and beyond to persuade them start seed business.

Rural Plant Clinic in Bangladesh

Financed by: CABI Bioscience, UK

Bangladesh losses near about 40% crop due to biotic stress such as pests and diseases. Insect pests and diseases are particularly serious challenge to food security in Bangladesh. The complexity of the challenge is due to the existence of several, well understood constraints.

Under farmers' field conditions, in certain years and in certain places, crop losses reach more than 40% and on rare occasions even up to 100%. Thus weaknesses in Bangladesh's plant health management regime are a known barrier to the achievement of high levels of sustainable agricultural production. Unfortunately, the country is lagging behind in the development and implementation of efficient, eco-friendly plant health management practices. It is an irony that in spite of the known serious consequences, toxic chemical pesticides, still serve as the only method used in protecting crops from massive insect/pest-born losses. Chemical pesticides are often used indiscriminately and at a very high rate of application and very frequently without knowing the actual purpose of the poison being applied.

12 The Green Innovation

All Living things get sick. Human and animals have doctors and hospitals, but plant health is often thrown to the mercy of agro-chemical dealers. In general, the dealers, themselves are non-professional. On the other side farmers' plant protection knowledge is also limited. Thus we have a situation like 'blind leading the blind.' There are plant pathology and entomology labs run by research institutes, but a few and farming communities that need them most are poorly served.

However, through extensive action research RDA has innovated a creative community service platform led by semi-educated rural women and men those advices farmers on pest and diseases the way a rural health centre does with human, literarily means Rural Plant Clinic and Plant Doctor.

13 The Green Innovation

Exploiting the advantage of readily available mobile phone network in Bangladesh, the Plant Clinic initiative has established Tele Plant Clinic Services for farmers who need the services more but living faraway from the clinics. Plant Doctors are also connected with national plant protection laboratories via mobile phone for seeking advice and diagnostic services.

Helpline: 01710-146111, 01712-491725, 01711-025883, 01745-279778, 01920-404388

Impact

Since 2008, 8 model clinics has been setup in different villages and 150 persons were trained on how to run a plant clinic. Trained plant doctors are serving their community through establishing plant clinics. Among the plant doctors about 50% are female. Awareness building about pesticide adulteration and motivate farmers about good agricultural practices and organic farming among the clinic villages. From the inception 15000 farmers have received plant health service from the clinics.

For the first time in the history of Bangladesh the agro-chemical dealers receiving written prescription from the farmers issued by plant doctors. It is reported in an international journal (Pesticide News) that a downward curb has been observed in toxic chemical use in and around clinic villages.

Collection, validation and documentation of local knowledge of pest control is the focal point of the initiative. More than 100 non-chemical solutions have been collected, validated and are being prescribed by the Plant Doctors as a substitute of chemical pesticides contributing a lot in improving national health as plant health is more about human health than plants

Trichoderma Enhanced Composting Technology

Financed by: Innovition & Katalyst

The Challenge

The substance which is obtained from living source is called organic matter. As for ecample the cow dung from cow, straw from rice etc. The organic matter is the life of soil. The soil which contains the nutrients in the right level for plant growth is called fertile soil. Organic matter is the main constituent of soil fertility. Soil which does not contain organic matter is dead soil like desert. A standard soil must contain 5 % organic matter but the organic matter status becomes less than 1% due to excessive farming and over application of chemical fertilizer.

So the nearly dead and barren soil needs only one treatment that is application of more and more organic matter (or organic fertilizer) to get back the life of soil. But there are several limitations. The cow dung, straw residue, plant leaves, crop residue which can be used for organic fertilizer production are now used for domestic fuel purpose due to high pressure of population. Farmers generally decompose household waste which takes 4-5 months and ultimately get decomposed manure with minimum nutrient content due to rainfall and sundry under open sky. So this kind of manure can not improve the organic matter of soil and the soil can not support food security of ever increasing population of the country

14 The Green Innovation

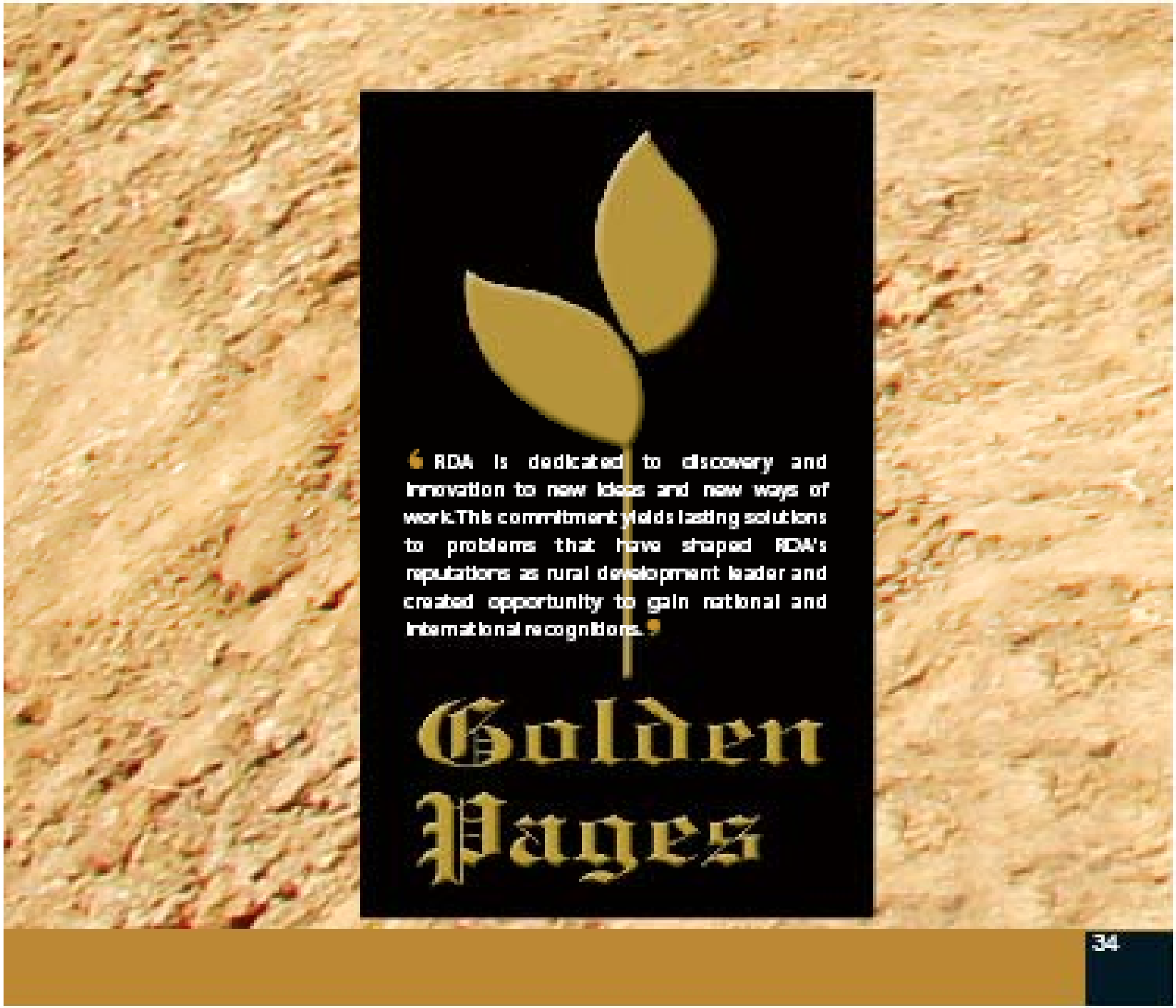
A judicious use of low cost composting technology can facilitate the rate of quality compost production. Also, promoting a better composting technology at the farmer's level will ensure an increased usage of quality compost for crop production as well as the fertile health of soil.

Trichoderma activator a soil borne fungus enhances the decomposition of organic material. It also accelerates the decomposition process to complete within 4-8 weeks whereas the traditional method takes 4-6 months. The trichocompost significantly increases soil fertility and gives better crop yield. It also acts as biopesticide.

RDA has established Trichoderma Laboratory in collaboration with Katalyst fund & technical help from BAU. Under this project RDA trained 180 local service providers both men and women. 150 demonstration plots were made and more than 100 yard meeting and 20 field days was arranged under this project in the northern region of Bangladesh. A video documentary on trichocompost preparation and use is being made to demonstrate the farming community for increasing awareness about the technology.

Impact

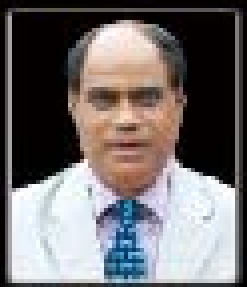
Through demonstration, training, video ICT and with the help of local promoters the *Trichoderma* technology has already been spreaded almost all the district of northern Bangladesh. Farmer's are enjoying higher production using trichocompost which they can make by themselves. It was reported that an increase of 20 % yield due to use of trichocompost. The soil structure, water holding capacity and organic content status was also improved at a significant rate. Farmer's can reduce 30% cost of chemical fertilizer, supplementing by the trichocompost technology. Moreover *Trichoderma* helps a lot in controlling different soil borne diseases ultimately gives poison free food to the consumer- a great support to the health sector of Bangladesh suffering a lot for over use of chemical pesticide & fertilizer.


RDA is dedicated to discovery and innovation to new ideas and new ways of work.This commitment yields lasting solutions to problems that have shaped RDA's reputations as rural development leader and created opportunity to gain national and international recognitions.
Golden
Pages

National Award

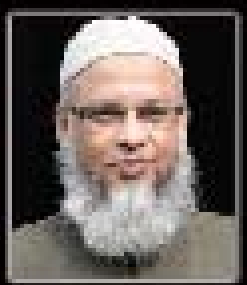
Independence Award, 2004

The Winner Team of RDA



M A Matin

AKM Zakaria



Mahmud Hossain Khan

Nazrul Islam Khan

Citation: Government of the People's Republic of Bangladesh Confirmed Rural Development Academy (RDA), Bogra, the highest national award- Independence Award, 2004 for extra-ordinary contribution in the field of rural development, more specifically in irrigation command area extension up to 4 fold through buried pipe, innovation of multipurpose use of low cost DTW, development of arsenic- free safe water supply plant and development of technical protocol for commercial hybrid maize seed production in Bangladesh.

National Awards

Bangabandhu National Agricultural Award 1415 Gold Medal

1

Bangabandhu National Agricultural Award 1417 Silver Medal

2

Citation-1: Government of the People's Republic of Bangladesh confirmed the highest national award in agricultural sector- Bangabandhu National Agricultural Award 1415 to Mr. M.A. Matin a dedicated Agriculture Engineer of RDA for developing several environment friendly agricultural technology.

Citation-2: Government of the People's Republic of Bangladesh confirmed the highest national award in agricultural sector- Bangabandhu National Agricultural Award 1417 to Mr. AKM Zakaria an Innovative Agricultural Scientist of RDA for Creating Long lasting awareness among the rural women and farmer through ICT based agriculture and rural development initiatives.

National Awards

HSBC-The Star Climate Award- 2011

1

Food & Agriculture Award- 2011

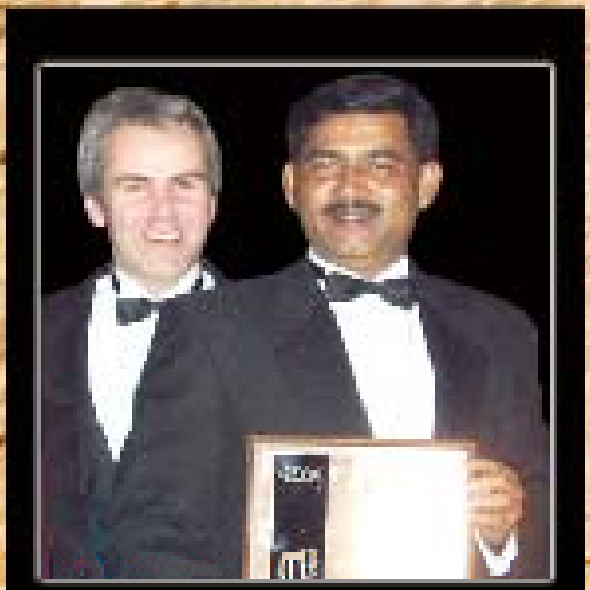
2

Citation-1: Hongkong-Shanghai Bank and the Daily Star confirmed HSBC-The Star Climate Award,2011 to Mr. AKM Zakaria of RDA for enabling rural women to fight poverty through eco-friendly, efficient and commercially viable seed production, preservation and marketing skills.

Citation-2: Oxfam-GB and Campaign for Sustainable Rural Livelihoods (CSRL) confirmed Food & Agriculture Award-2011 to Mr. AKM Zakaria of RDA for pioneering use of ICT in agricultural development of Bangladesh.

International Awards

African-Asian Rural Development Award
AARDO, Delhi 2012
1

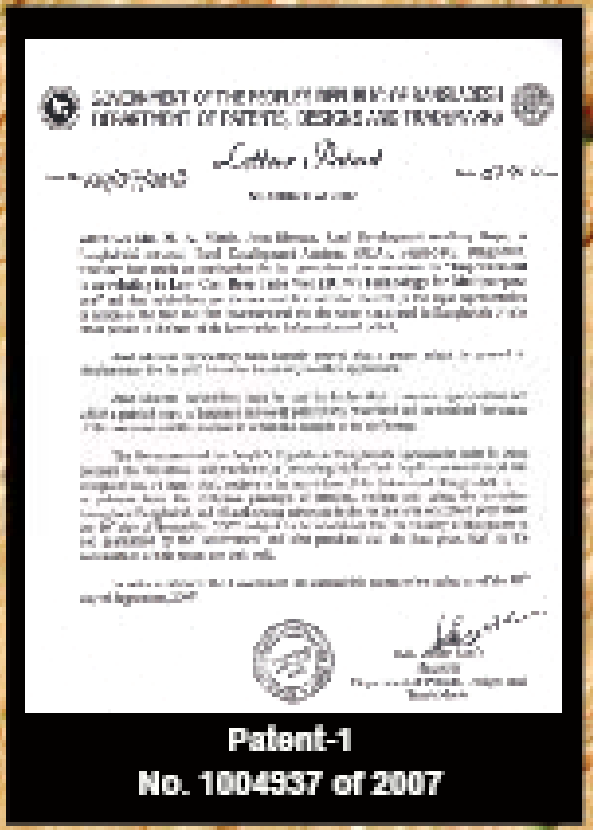


International Communication Award
IVCA, London 2004
2

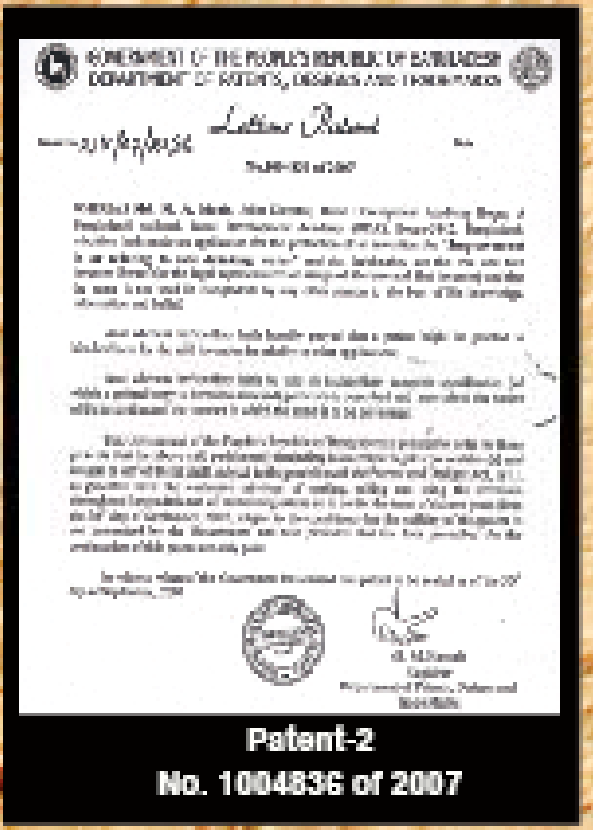
Citation-1: African-Asian Rural Development Organization (AARDO), Delhi confirmed African-Asian Rural Development Award-2012 to Rural Development Academy, Bogra for its extra ordinary contribution in rural development. Mr. M. A. Matin of RDA received the Award in presence of Indian Prime minister in a ceremony held in Delhi.

Citation-2: International Visual Communication Association (IVCA), London confirmed International Communication Award- 2004 to Mr. AKM Zakaria of RDA for developing women to women extension model through digital video ICT approach.

Technology Patent

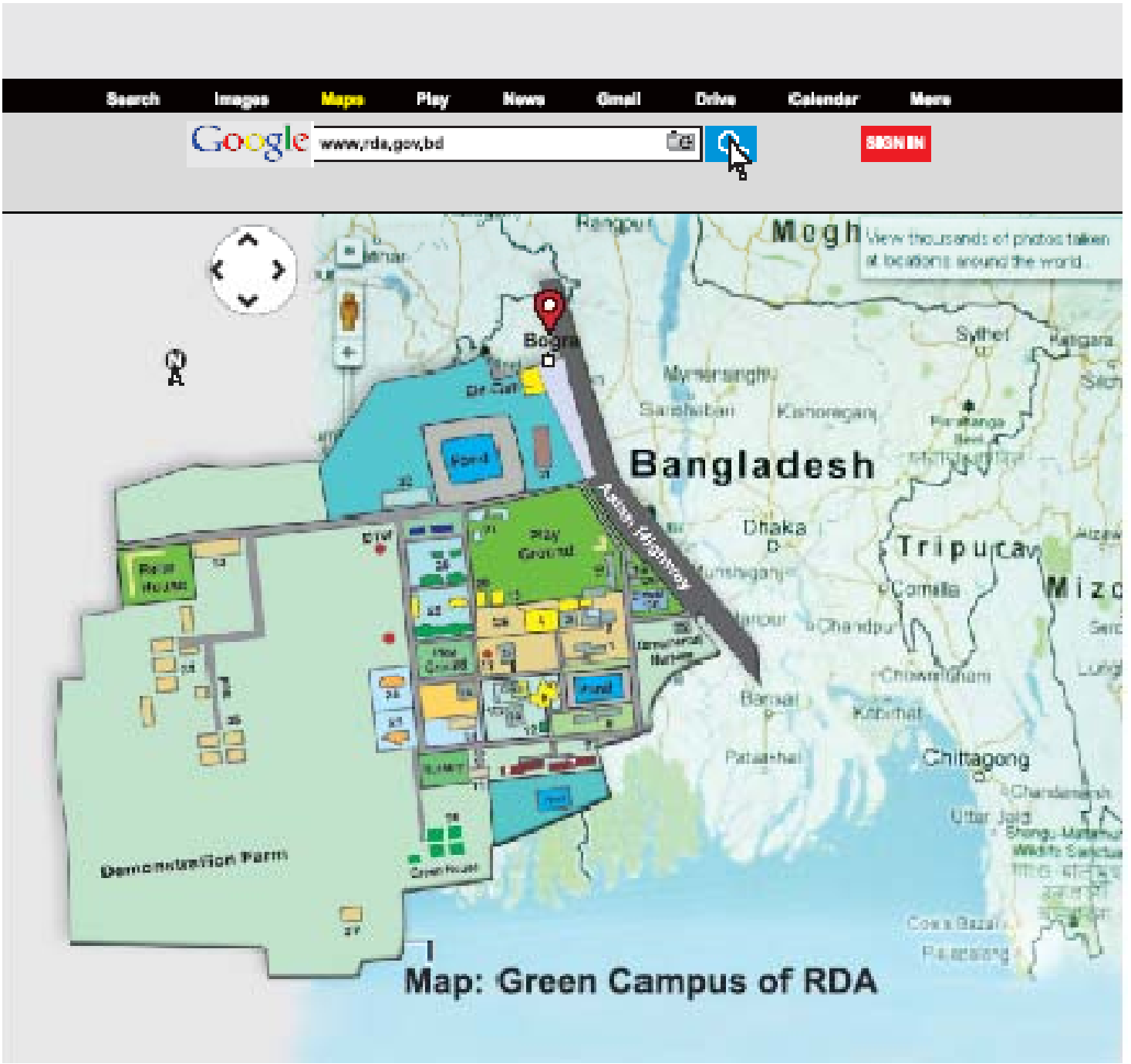


Patent-1
No. 1004937 of 2007



Patent-2
No. 1004836 of 2007

Citation: The Government of the People's Republic of Bangladesh is pleased to order by these presents that Mr. Md. M. A. Matin of Rural Development Academy, Bogra shall, subject to the provisions of the Patents and Designs Act, 1911, as patentee have the exclusive privilege of making, selling and using the invention Patent-1 Low-cost Deep Tube Well (DTW) Technology for Multipurpose Use and Patent-2 Improvement in relating to safe drinking water throughout Bangladesh and authorizing others so to do for the term of sixteen years from the 30th day of September, 2007, 30th day of September, 2009, respectively subject to the conditions that the validity of this patent is not guaranteed by the Government and also provided that the fees prescribed for the continuation of this patent are duly paid.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Rural Development and Cooperative Division

Ministry of Local Government, Rural Development & Co-operatives

Bangladesh