

# **NAYAKRISHI ANDOLON**

**A farmers' movement  
for seed & food sovereignty  
and biodiversity**

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*Nayakrishi Andolon: A Farmers Movement For  
Seed & Food Sovereignty and Biodiversity*  
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Published by:

**Narigrantha Prabartana**  
(The Feminist Bookstore)

6/8 Sir Syed Road, Mohammadpur  
Dhaka-1207, Bangladesh  
e-mail: narigrantha@gmail.com

Design by UBINIG Media & Communication Section

First Edition 26 February, 2023  
Cover Design: @UBINIG

ISBN: 978-984-35-3957-1

Printed by: N.N.Printers  
2/6 (Ground Floor), Noorjahan Road  
Mohammadpur, Dhaka-1207, Bangladesh

**Price :**

BDT: 200  
US \$ 10



## Acknowledgement

We acknowledge with thanks the contributions of Nayakrishi farmers and those of our colleagues in UBINIG for providing valuable information and insights regarding agroecological practices. This book is based on our collective knowledge and wisdom with the farmers at the village level.

The photos are taken by Abul Kalam



## Other Books of Narigrantha Prabartana

(List of books in English language only)

Women and Trees  
by Farida Akhter (1994)

On Sahaj Way to Ananda  
by UBINIG (19953)

The Women's Day on Food at the NGO Forum  
during World Food Summit, Rome Italy (1997)

'Beesh' Poisoning of the Lives:  
A study on women and pesticides in Bangladesh by UBINIG(2002)

Floriculture in Bangladesh:  
A Case Study by UBINIG(2010)

Search for a new Vision  
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False Linkage of food and population:  
The man-made scare for corporate solutions  
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Water in Women's daily Lives: An exploratory study of  
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Bt brinjal: Story of Corporate Lies  
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Depopulating Bangladesh:  
Essays on the Politics of Fertility and Reproductive Rights  
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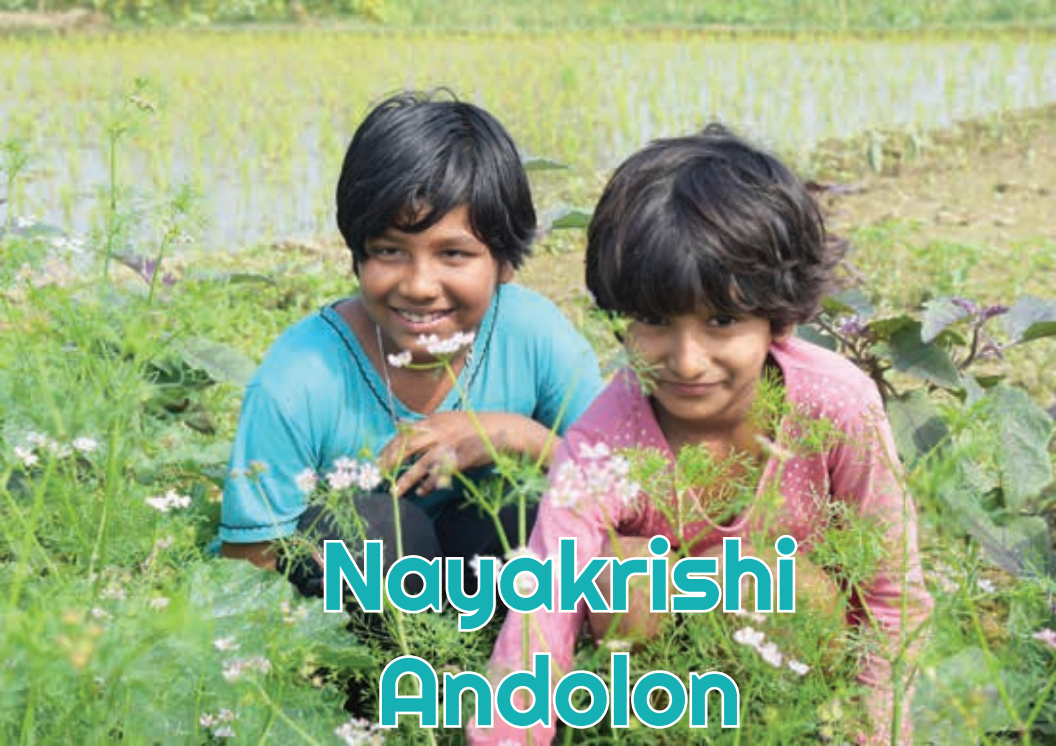
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# Nayakrishi Andolon

**N**ayakrishi Andolon is the biodiversity-based ecological agriculture movement in Bangladesh led by farming communities. The movement cultivates a strong but intimate sense of belonging to nature and re-awakens the truth that earth is the home of all life forms.

Biodiversity-based ecological agriculture is life-oriented farming and cultural practice that brings joy to our spirit. This is the spirit that co-evolves with nature.

Nayakrishi evokes our individual and collective socio-natural beings and facilitates experiencing the world as an intimate part of our beings. We re-learn that nature is not merely a depository of raw materials and means of our egoistic consumption, but part of us. We are material natural beings as well. All such experiences are learned through mundane practical ways of producing our food and nourishments to survive as natural beings.

## Our Aims

Detoxification of  
land, water, air, and food chains.

Achieving seed & food sovereignty  
through biodiversity-based  
ecological farming.

Defending farmers' seed systems  
& Knowledge practices

Resist privatization of  
natural resources and life forms

Seeds are life forms and the primary principle of natural biological cycle and agroecological relations. Therefore seeds are strategic biological, socio-economic and political sites of activities to regain a community's control and command over their lives, ecology and agrarian production systems. More so in the context of neo-liberal global order and genetic manipulation, particularly re-editing the genetic integrity of life forms. Seeds are simple entities but are alive and therefore the most important biological foundations of life, health and nutritional security. Farmers seed systems are building blocks of resilient communities.

**Nayakrishi Andolon demonstrates how we could live differently. We invite all to alternative lifestyles of immense joy by living in harmony with nature and our inner selves. This is what we phrase as 'Shohoj way to Ananda'.**



## **Shohoj Way to Anando**

Since independence in 1971 Bangladesh, a country with a massive wealth of biodiversity and natural resources has been struggling to get out of poverty and underdevelopment. Nayakrishi Andolon is a farmer-led community movement to demonstrate the immense potentiality of biodiversity-based ecological farming to solve the persistent crisis of food, nutrition, and health and the surest way to detoxify and rebuild the resilient and strong agrarian base for national prosperity and happiness. Agriculture must be the engine of development and the principles of biodiversity-based farming could teach us the way forward to rebuild Bangladesh.

Growing out of the mighty confluence of three major rivers of Brahmaputra, Padma, and Meghna, flowing into the Bay of Bengal, Bangladesh inherits unique bio-geographical features where the margin between land and water often vanishes into each other's realm. It is an agrarian civilization where agriculture is also aquaculture. Bio-geographically Bangladesh is a major hotspot of biodiversity and genetic resources that naturally contributes to a practice of forestry, agriculture, and aquaculture that is based on the principle of conservation and regeneration of diverse lifeforms. Farming historically has been the practice of unique agroecological knowledge consistent with the landscape of Bangladesh. The agrarian culture that has historically flourished is rooted in the natural conditions of life. Bangladesh is well known for its rich spiritual grounding and the ability to redesign communities in harmony





**Awareness and education through community festivals and demonstrating the golden ages of invention and discovery of the farming communities is the key to realize the role of agriculture. It helps in our survival struggles and in strengthening our resilience.**

with nature. Nayakrishi Andolon, the biodiversity-based ecological agriculture, is the farming practice that is grounded in such agro-ecological and spiritual traditions to solve practical and cultural questions of life, living, and livelihood strategies of the people. To build strong and resilient communities Nayakrishi Andolon reinvents and reconstitutes farming as the art of regeneration of life and nature through life-affirming activities.

Incessant growth and industrial urbanization coupled with profiteering and marketing of harmful technologies and toxins is the major challenge to survival we are facing today. It is now widely recognized that undermining the sustainability of a nation by causing environmental and ecological destruction and climatic disaster could quickly lead us towards planetary destruction. Nayakrishi Andolon demonstrates how we could live differently. We invite all to alternative lifestyles of immense joy by living in harmony with nature and our inner selves. This is what we phrase as 'Shohoj way to Ananda'.

**Farmers of Nayakrishi Andolon  
conserve and regenerate thousands of  
local rice varieties every year.**





## Chemicals, Poisons & Agriculture

**B**angladesh is a small country with a 147,570 km area and over 170 million people. But within this small area, there is huge diversity identified by the Agroecological Zones (AEZ). The study conducted during the 1980s categorized the diversity in terms of physiography, soils, and land levels by the occurrence of flooding and nature of the agro-climatology of the country. The AEZ study recognized 30 agro-ecological regions and 88 subregions; further subdivided into 535 agroecological units [FAO/UNDP, 1988].

Agriculture of Bangladesh is dominated by small farm holdings (less than a hectare) which constitute 84.38 percent of total farming households and only over 15.61% are medium and 1.54% are large farms (over 7.50 acres) [BBS, 2022]. These farmers produce the crops, particularly rice, required for the country. There are more than 570 million farms in the world. More than 90 percent of farms are run by an individual or a family and rely primarily on family labour. Estimates suggest that they occupy around 70–80 percent of farmland and produce more than 80 percent of the world's food in value term [FAO, 2014].

After independence, agriculture was of paramount importance in the economy where 90 percent of the population depended directly or indirectly on it for living and contributed 60 percent to the GDP providing food, fiber, fuel, medicine, and foreign exchange. But, the contribution of agriculture has been gradually declining not as a normal process of economic transformation, but by the explicit policy of 'development'; industrialization and modernization through the destruction of agriculture. Bangladesh abandoned the option of land reform and agricultural transformation that could provide the engine of prosperity by unleashing the natural agroecological power of her biogeographical resources. During 1983–84, the contribution of agriculture was 49 percent of the GDP compared to only 10 percent for the industrial sector, and 18 percent for trade and transport. The gradual reduction in the contribution of the agriculture sector to the GDP has been visible since 1990, with a 38 percent contribution to the national GDP. At present, according to Agriculture and Rural Statistics, 2017, agriculture contributes only 13 percent to the country's GDP and employs 43 percent of the labor force. The decline of agriculture's share in GDP is seen positively as 'modernization'.

The idea of 'modernization' is based on the notion that agriculture means low growth and backwardness, while the development means turning lands into means of commercial activities,



industries, and industrial food production. Consequently, in such a modernized scenario, a country doesn't need farmers; they are turned into surplus populations to be sold cheaply in the labor market. So the commonly used statistics that are referred to as the contribution of agriculture to the GDP, are rendered obscure and irrelevant to understand agriculture as an agroecological livelihood strategy and practice of the people. People's lives, particularly those of women, are absent in the male denominators of the GDP calculations and calculative reduction of real lives into numbers. That agriculture's contribution to GDP has declined, but continues to employ 43% of the population does not mean much, as it fails to grasp the complex nature of agriculture with the people's livelihood in their bio-geographical landscapes of diverse agro-ecological zones. The shift from agriculture to so-called development and industrialization is bringing different and unprecedented catastrophes in the lives of people. Destruction of the biodiversity, environment, health, and rights of the farmers and women had their tolls. Continuous lack of attention and proper planning led to wrong decisions and proved detrimental to the greater interest of agriculture as a sector and those of farmers as a productive population.

In the early sixties of the last century, the World Bank and other international agencies made conditional loans to developing

countries to adopt “modern agriculture” – a package of chemical fertilizers, pesticides, and irrigation systems with diesel and electricity in the name of achieving higher yields and thereby attaining food self-sufficiency. This approach was called the Green Revolution. While cereal production increased in Bangladesh, oil seeds, lentils, forest products, and in general biomass – a major source of energy in rural areas – have alarmingly decreased. The misconception of ‘agriculture’ is scandalously obvious here. Agriculture does not only produce food, but also fuelwoods, fibers, medicines, construction materials, etc. Another misconception about agriculture is that it is not merely a space for ‘cultivated’ food, but space for the uncultivated food source as well. Polluting both terrestrial and aquatic environments by modern agriculture through the use of chemicals, pesticides, and herbicide destroys the biological foundation of farming and renders food sources toxic. As a result naturally available food for all living beings including humans & animals is destroyed.



**In 2015, the total usage of pesticides was 33371.60 tonnes, in 2020 the usage was 37562.81 tonnes, showing an increase of 12.55%.**

Food sources that people could easily collect without cultivating has been destroyed. The fish and aquatic resources have been destroyed by chemicals, pesticides, and unsustainable urbanization -- which implies dumping waste into rivers and agricultural lands. This has proved disastrous for the country. Food insufficiency remains an acute problem, but now ‘food safety’ has become another added major concern. The rural environment is destroyed due to the excessive use of chemicals. Such disasters are added to the already environmental and ecological erosion of the land, rivers, and water bodies.

To make the situation worse, the biotechnology industry, in the absence of biosafety laws and public awareness, is promoting and facilitating the proliferation of genetically modified organisms (GMOs) in food and agriculture, creating the imminent danger of biological pollution. They are feeding on the technological disaster of the 'Green Revolution' and are already proposing a 'Second Green Revolution' rather than amending the damage caused already by toxic and chemical-based industrial farming. Such steps will simply accelerate biological pollution in countries that are still rich in biodiversity and genetic resources.

The Green Revolution was from the beginning dependent on the use of chemical fertilizers and pesticides. At the recommendation of international donors fertilizer and pesticides were distributed for free up to 1974, followed by a 50% subsidy till 1979. The donors came up with recommendations later that the subsidy should be completely lifted. However because of the increased dependence on the use of the products, the use was not reduced [PROBE, 2012].

Despite the critique of the Green Revolution and concerns about the loss of biodiversity and environmental degradation, the fertilizer-pesticide-based industrial production of food continued. According to the

records of the Department of Agricultural Extension, the use of chemical fertilizers has almost doubled in a decade. According to the Department of Agricultural Extension (DAE), in the 2022-2023 fiscal year, the demand for urea fertilizer is 3.4 million tonnes, diammonium phosphate (DAP) 2.4 million tonnes, triple superphosphate (TSP) 1.04 million tonnes and the muriate of potash (MOP) 1.4 million tonnes.

Farmers these days need to use more & more fertilizer to produce crops as the land is losing fertility, mainly because of a deficiency in organic elements. From 1980-81 and 2015-16, the use of almost every kind of chemical, including nitrogen, potassium, and phosphorus, has increased manifolds, according to relevant sources. For instance, Bangladesh used 365,881 tons of urea (nitrogen) in 1980-81, which reached 1,183,024 tons in 2015-16.

According to the Soil Resource Development Institute (SRDI), good soil should contain a minimum of 2.5% organic matter. In Bangladesh, most of the soil contains less than 1.5 % organic matter.

SRDI has stated that the nutrient deficiency of the country's arable soil is acute. It is estimated that the overall nitrogen balance of Bangladesh soils is negative, phosphorus balance is near zero, and potassium balance is





**Indiscriminate use of pesticides  
& without protection**

highly negative. The same situation exists for sulfur, zinc, boron, and other organic matter, as well as pH status.

The degradation of soil health has been attributed to larger crop removal due to increasing crop intensity, growth of modern crops (high-yielding varieties and hybrids), soil erosion, soil salinity, soil acidity, deforestation, nutrient leaching, and minimum manure application, numerous studies have shown.

In 2010 - 2011, the usage of chemical fertilizers (urea, TSP, DAP, MOP) was 41.16 lakh metric tonnes whereas, in 2020-2021, this usage stands at 52.08 lakh metric tonnes, indicating an increase of 26.53%. In the case of pesticide usage, in 2015, the total usage of pesticides was 33371.60 tonnes whereas in 2020, the total usage of pesticides was 37562.81 tonnes, showing an increase of 12.55%.

Pesticide-based agriculture goes against poultry and livestock keeping by small farmers. They are forced to keep the hen, ducks, cows, and goats inside home when the large or middle-scale commercial farmers are spraying pesticides in their fields. This discourages free ranging poultry keeping.

These rampant uses of pesticides create many health hazards like cancer, skin cancer, different organ cancer, kidney damage,

liver damage, genetic defects, fetus damage, congenital anomaly, and birth defects. Many children are born with heart defects, neurological defects, and so on. The use of pesticides in vegetables is likely to grow further in the future unless appropriate and known alternatives, such as those developed by biodiversity-based ecological farming or conventional integrated pest management approaches, are developed.

Allowing the use of antibiotics on crops has opened up a window for their indiscriminate use. The US national public health agency Centres for Disease Control and Prevention warned that Bangladesh is very susceptible to antimicrobial resistance and is moving towards a pandemic, likely to be caused by antimicrobial resistance. A pandemic caused by antimicrobial resistance can, as medical experts say, be more frightening than the Covid pandemic.

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## Ecological Meaning of 'Small & Marginal' Farmers

**W**e know that 'small and marginal farmers' not only ensure food supply to 170 million people of Bangladesh but also contribute to the conservation and regeneration of the country's agro-biodiversity and genetic resources. Small and marginal farmers also perform various other ecological and environmental functions that are generally ignored in mainstream economics and ecological literatures.

The economic notions such as 'small and marginal farmer' or 'subsistence agriculture', etc., developed concurrently with the ideology of the Green Revolution, is a major hindrance in understanding the complex nature of agriculture and the functions they play in ecology and the environment. Green Revolution needed such economic categories to prove the efficiency or inefficiency of farming systems as a client of their political and technological package. Political because, Green Revolution is a response to Red Revolution and in practical terms meant denial of land reform to



enhance agricultural productivity and attempt to achieve the same through technological intervention; secondly, artificially maintaining the terms of trade in favor of industrial as against agricultural sector or the farming communities.

While the use of economic paradigm, measuring performance in terms of money or at best by the visible outputs of a system, is common and dominant in the capitalist worldview, an appreciation of Nayakrishi Andolon demands an understanding of the dynamics between economic and ecological relation, in a way that one is not reduced into the other. Economic representation inevitably misses the value of an agricultural system, the value of multiple and complex functions it performs, by reducing its performance as merely a 'firm' in the market, while ecological calculation misses the reality that farming households are also part of the market system.

In this context, working with the farming community for biodiversity-based ecological agriculture is to enable farmers' capacity to participate in the market on their terms. Capacity building, in this case, implies resisting the anarchy and uncertainty of the capitalist market by enhancing the system's capacity to absorb risks and at the same time taking advantage of means available for the exchange of the product for economic return. The farmer needs economic benefits from the services they perform; therefore enabling their capacities to participate in a market economy is critical. However, it is possible only by making a household farming system ecologically and environmentally resilient so that it can satisfy the household's consumption need as well as the need to reproduce the system.

The market constantly breaks and fragments the agricultural systems into different sectors of production. The 'technical' division



# Enabling Conditions of Biodiverse Agroecological Farming Systems

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1. **Availability of a farmer seed system.** This is the key to the farmer-led innovation that has historically contributed to the agroecological evolution and generation of agricultural knowledge. Farmers must know about various crops, and the right time to seed and steer through the seasonal and climatic variance.
2. **Access and availability of community knowledge** functioning through oral communication, community memory, and conservation of popular wisdom through stories, and narratives related to ecological diversity.
3. **Existence of a fairly functional system of culture** related particularly to food and nutrition. The cultural practices link agricultural consumption to production without which an articulated self-reliant agricultural system cannot sustain itself.
4. **Agriculture does not only produce food, it also produces medicines, fibers, construction materials, fodder, fuel woods, etc.** A determinate rural culture is linked to a specific agroecological system and its performance.
5. **An informal system of sharing agricultural inputs and labor.**
6. **Community management of common resources** such as water, forests, and biomass.
7. **An operative notion of common property** designing with the cultivated and uncultivated sources for food and livelihood and moral values that keeps the community together with a common purpose.



within an ecosystem is torn apart to make each independent economic unit of production. Thus poultry, an integral activity of farming households, becomes the poultry industry, and animals are raised in the factories for milk and meat production. Fishery appears as an independent economic sector. By contrast, biodiversity-based ecological agriculture integrates and promotes social division of production not by the logic of the market, but by the imperative of the natural and ecological relation, without which agriculture cannot be sustainable. Biodiversity-based ecological agriculture thus increasingly unites and reunites the fragmented and disarticulated parts of nature. Nayakrishi Andolon is a farmer-led movement of resistance, imparting novel political and

cultural meaning to biodiversity-based ecological agriculture over and above the role it plays in attaining food, nutrition, and seed sovereignty.

So, how to conceptualize a farming household from the perspective presented above to transcend the Green Revolution paradigms? Farming households ensure our food and nutritional needs and are the nodal points of both in-situ and ex-situ conservation of genetic resources. Farming, by its very nature of experiential practice based on empirical observation, is a knowledge-based operation. Besides, farming is not possible without some primary knowledge of climate & climate variability, the nature of the crops, biodiversity, and agroecological systems, and other related knowledge.



**Nayakrishi  
practices  
agriculture  
as a way of life.**

**Since the Green  
Revolution,  
agriculture lost  
its meaning as  
a creative and  
regenerating  
activity or the  
metabolic  
interaction of  
human beings  
with nature.**



## **Learning from History**

**W**hen UBINIG got involved with the farming community in the 90s the idea of rural development was fully cast by the paradigm of the Green Revolution. Green Revolution was the attempt to technologically fix the socio-political contradictions and crisis of post-colonial states gaining independence after the second world war. During this period countries like Bangladesh were exposed to the ideas of the red revolution. The history of the Green Revolution coincides with the history of the Cold War.

Bangladesh, as an agrarian economy required transformation of her agriculture through socio-economic reforms and not technological fixes. Therefore primarily needed radical land reform, the installation of democratic institutions, and reciprocal knowledge flows between formal and informal practices of both scientists and farmers. Farmers must solve their concrete problems in the context of their ecological, socio-economic, and cultural reality; scientists could address the concrete need of the farmers. These did not happen. During the 60s agrarian questions were addressed as a technological problem of food production the rich biodiverse traditions and practices have been systematically destroyed. The 90s is the period when 'farming' started to occupy a secondary role in contrast to industrial food production. The notion of 'production' had started to essentially mean industrial production. The agrarian connotation



of 'production' as the regeneration of life had begun to sway and gradually lost in oblivion.

These are critical and fundamental changes that have undermined the cultural and ethical questions of agrarian communities and civilizations that provide meaning to society and human lives. Modern agriculture has undermined, denied, or silenced such questions; for example, should farmers kill an insect, microbes, or any life forms instead of ecologically managing pests, insects, etc.? What are the ways and farming practices that allow all life forms to play their positive natural role in a system? Are human beings stewards of the creation or merely consuming machine that turns them into a 'pest' devouring nature and therefore threatening all other life forms?

Farming is a way of life. Since the Green Revolution farming has started to lose its meaning as a creative and regenerating activity

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**Women are natural leaders of Nayakrishi. An old photo showing the use of water hyacinths as easily available materials for composting**



or the metabolic interaction of human beings with nature. Being displaced from the idea of life-affirming activity, farming has been reduced to an industrial activity of food processing. As a result, agriculture is reduced to merely a sector of industrial production in line with the western model of capitalist-industrial economy. Indeed, the vested political interest of the western powers dictated the development policy that fits into their overall strategy of control confirming the integration of Bangladesh's economy into the world market. But there is another side of the story: a shift in the idea of farming.

The shift also occurred at another level. Increasing the productivity of a rice variety by external inputs has undermined the need for land reform, land distribution, and ensuring the access of farmers to means of regeneration of life. Instead, the farming communities have been reduced to the receivers' end of technology and services from developed countries as private producers. The 'modernization of agriculture' is indeed the industrialization of food production and recolonization of agricultural lands and displacement of the role of farming as life-affirming activity. Environmentally and ecologically destructive industrialization of life and nature has been set into motion.

## Learning from Farmers

Green Revolution is premised on effacing the complexity of farming and conceptualizing agriculture merely as a 'factory'. We learned from the farmers that farming by nature is ecological and agrarian 'production' is a regenerative act of both nature and human beings. Therefore farming is very different from the industrial production of food. The performance of agricultural systems depends on efficient means to recycle the flow of biological 'surpluses'. The natural recycling of various elements of nature is in no way similar to the environmentally destructive dumping of industrial wastes such as chemicals, pesticides, and other environmentally harmful chemicals. The energy needed for agriculture cannot by definition be in the form of industrial input, e.g. fossil fuel-based products. Farming produces its own energy and efficient agricultural systems and must regenerate the energy it consumes in the process of production. Energy in farming is always renewable. When Nayakrishi Andolon started to take shape in the early 1990s, the major challenge the farmers' movement faced was the ideology of industry as against the life-affirming activities of agriculture. Industry

produces by destruction, but by contrast farming regenerates what it consumes in production.

We had to face the lies and the myths that the industrial transformation of the rural landscape is the way to go forward into the future and that 'progress' means the destruction of the life-affirming activities of the farming household. Nayakrishi Andolon had literarily started by challenging the myth of 'progress', which means to the farmers the destruction of the life-affirming activities of the farming household. No one has the right to destroy the livelihood of farming communities. The first major lesson, therefore, we learned from farmers is that agriculture is a way of life for farming communities and farming is not industrial food production run by food companies and corporations.

The notion of space and its relation to agriculture is the second crucial area that demands attention to understand the Nayakrishi movement. The crucial role of space is not easily discernible. The more we engaged with the farming communities the more we became aware of the meaning of 'space' in agriculture and the art of management of multiple spaces in farming. The conventional notion is that farming means merely 'cultivation' in a fixed space, implying a notion of agriculture that takes place only in a predetermined space of activity. What such prejudice misses are the complex functions in which farming households regularly rearrange cultivated and

### Farmer's Field School





uncultivated spaces that together meet the need of the households. Farming is the management of multiple spaces and next to the cultivation of specific crops lays the major importance of the uncultivated spaces managed to source various needs of the family including uncultivated food. Agriculture is also ensuring the management of uncultivated spaces that provide us food, fuel or renewable energy, medicine, etc., and at the same time ensures a home for domesticated and undomesticated species and a variety of life.

The idea that cultivation is the only form of engaging with nature is not true at all in agriculture. Agriculture is the management of both cultivated and uncultivated spaces. Farmer's mode of relating with nature is not limited by the cultivated space. The immediate need is supplied both by cultivated and uncultivated space and is possible if they are managed without poisons or chemicals. In a study conducted by UBINIG, it was revealed that in some agro-ecologically well-managed ecosystem, such as those maintained by Nayakrishi, resources poor farmers can collect nearly 40 percent of their food and nutritional needs from uncultivated sources. This is much higher in the case of medicinal plants, fuel woods, and biomass needs. These are possible by efficient management of uncultivated spaces in the Nayakrishi farming practices.

The importance of management of space is extremely important when farmers design the space for



**Farmers' relation with nature is not limited by the cultivated space. The immediate need is supplied both by cultivated and uncultivated space and is possible only if these are managed without poisons or chemicals.**



various crops in a mixed cropping and rotational system to ensure the best return in terms of the species of crops and ecological benefits. The mixed cropping system instead of monoculture is the easiest example of how the management of space determines the performance of agriculture and significantly enhances the output.

The notion of multiple spaces and their efficient management is also paramount when we keep in mind that farming households are also the source of milk, egg, meat, and fish. So the animals, poultry birds, and aquatic lives also require sharing or occupying spaces in farming households. The farming community manages common spaces which they share between households to enhance the productivity of a village, to produce milk, meat, and fish. Villages are always replete with hidden spaces and possibilities to design

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**Nayakrishi Andolon started in 1990 by farmers eager to get out of chemicals and pesticide based dependent agriculture to biodiversity-based farming practice among small scale farmers**



ecologically to optimize production.

The importance of space is systematically ignored in industrial food production. The so-called debate about the productivity of agriculture recurrently comes up to prove that ecological and biodiversity-based agricultural practices cannot feed humanity, therefore, industrial food production and monoculture are the answer. This is another lie and a myth and originates in a fixed notion of single space in agriculture, i.e., lands, where a single crop is produced. Modern agriculture in some cases increased the production of cereals, the so-called staple crops, but reduced the production of oilseeds, lentils, beans, fruit, and medicinal plants as well as construction materials, medicine and fuel wood, etc. Similarly milk, meat, and fish have also reduced. There is no baseline data to prove that modern agriculture increased food production. The data available for Bangladesh shows in most cases expansion of agricultural lands manifesting in an increase in cereal production but hardly reflecting enhancement of per acre productivity. In contrast, Nayakrishi concentrates on the total yield of a farming system including the enhancement of the system's overall sustainability and fertility. The immediate goal of Nayakrishi is to increase the production of safe, healthy, and nutritious food, both in quantitative and qualitative terms. Thus with farming communities, we arrived at the second major definition of agriculture: farming is the art of management of multiple spaces to enhance the productivity and performance of an agroecological system.



**Young and old farmers, men and women are all members of Nayakrishi. Knowledge is passed on from older to the younger farmers**



## How Nayakrishi Started?

UBINIG, a policy research organization started in 1984, got involved with farmers in 1990 and formed the small and marginal farmers' movement called Nayakrishi Andolon. Two particular situations encouraged UBINIG into biodiversity-based farming; a. the floods of 1987 and 1988 where farmers were badly affected; b. the preparations for the Earth Summit (held in Rio de Janeiro in 1992). The two consecutive floods of 1987 and 1988 had devastating effects on the farmers who lost standing Aman crop, the most important cropping season of the year, the farmers felt helpless and approached UBINIG in one of its rural centers in Tangail district. UBINIG was there to work with the handloom weavers. Through interactions with the farmers, it was revealed very clearly that the effects of floods were more devastating because farmers were dependent on the reduced diversity of rice seeds and that they could not afford to bear the additional costs of fertilizers and pesticides. UBINIG researched to know the situation to find out the impact



of modern agriculture on farmers.

At the same time, UBINIG was engaged in various international networks on the environment. During the preparatory meetings of the Earth Summit, UBINIG got to know about the initiatives of ecological agriculture and biodiversity preservation in other countries in South Asia and Europe. With research findings, UBINIG was convinced to take initiative to get farmers out of chemical-based agriculture. The concerns for health and the environment and the loss of diversity became prominent in the discussions among the farmers. Nayakrishi Andolon, the new agricultural movement, thus, started in 1990 with the basic principles of no use of pesticides, gradual decrease of chemical fertilizers, no use of groundwater, and most importantly, using farmer-saved seeds. Since then, the Nayakrishi farmers have been growing crops without the use of chemical fertilizers, pesticides, and use of underground water for irrigation. For the small and marginal farmers, it was a relief from incurring cash costs and going into debt conditions.

Nayakrishi was welcomed initially more by women than men. While young generation



**Hundreds of local varieties of rice, vegetables, fruit, timber crops and livestock have been reintroduced and being regenerated by the Nayakrishi farmers**





**A resilient farming system is biodiverse. The per acre productivity of a bidiverse farm is always higher than monoculture and chemical and fossil-fuel based industrial food production.**

men got used to mechanized agriculture, women felt that they were becoming redundant from farming practices. Women were concerned that the excessive use of chemicals was harmful to the environment. “It destroyed my body” – the statement by a Nayakrishi woman farmer is significant. By the word ‘body’ she meant the soil, water, seeds, birds, insects, butterflies, micro-organisms, and all life forms. Modern agriculture has pushed women out of rice production practices. Women’s’ knowledge encompasses holistic aspects of rice including collection, regeneration, and maintenance. But modern agriculture changed the situation of producing rice diversity. It became a monoculture of IRRI rice varieties. However, small and marginal farmers did not stop producing diverse rice varieties according to different agro-ecological situations and those which can resist natural calamities like floods, drought, cyclones, etc. Nayakrishi Andolon soon became active in collecting rice varieties, vegetables, lentils, oil seeds, and fruits.



## Nayakrishi and Conservation of Biodiversity & Genetic Resources

For Nayakrishi, it was not just an issue to be known as ecological agriculture, but in the situation of aggravating loss of biodiversity, the major focus became the 'biodiversity-based' farming practices. With small holdings of farmers' land, the approach became very meaningful to innovate through their knowledge base on how to maximize production for meeting subsistence needs as well as preserving biodiversity. Biodiversity is not just a term to mean only diversity of species and varieties that have no use in farmers' lives. For each area, the diversity is the unique combination of crops, livestock, poultry, fish, etc. For example, in the flood plain areas of Tangail, the emphasis on crops was rice, jute, goat rearing, and fish while in drought-prone areas it was on fruits, vegetables, in the char areas peanuts, black gram, sesame, cow rearing, and in coastal areas rice, beans, chicken varieties, etc. Hundreds of local varieties of rice, vegetables, fruit and timber crops, etc. have been reintroduced in the Nayakrishi villages. At present, farmers in the Nayakrishi area cultivate at least 2700 varieties of rice, and the number is increasing. The farmers are happily sharing and exchanging seeds among themselves and increasing the genetic resource base of their community.

The social and cultural aspects of seeds are very significant. For example, the names of different rice varieties were interesting and very intimate to the farming families. They named the paddy as they name their children. Some examples of the names are *Chamara*, *Tulshimala*, *Aloimalati*, etc. The International Rice Research Institute (IRRI) and its Bangladeshi counterpart, Bangladesh Rice Research Institute (BRRI), introduced HYV seeds. The names of the new varieties retained their abstract laboratory origin, such as BR-20, BR-11, BRRI-50, etc. One can see that automatically it is far from farmers' perceptions of names, and even much further from women. The practice of modern agriculture, especially through the promotion of fewer varieties of paddy has resulted in the erosion of local varieties to a large extent. This was mainly because farmers were persuaded to cultivate only the so-called "higher-yielding varieties" and not the local varieties. Nayakrishi farmers also collected rice varieties that can cope with difficult climatic and weather conditions.



## Integration of livelihoods

**A**griculture is a holistic notion in Nayakrishi and therefore fragmentation and disintegration into different sectors poses the major agroecological challenge. The major challenge is to develop ecological designs that can maintain integrative relations between all areas of farming, such as crops, horticulture and agroforestry, livestock, poultry, aquaculture, etc. Every Nayakrishi farming household is a deposit of extensive biodiversity in plants, animals, birds, trees, etc. In addition households in a village constitute an interconnected whole so that biodiversity could be enhanced as a community practice. A Nayakrishi farming household is only complete if it has family members that include cows, goats, hens, cocks, ducks, etc. It also has a relational bond between farmers, fishers, potters, weavers, blacksmiths, and other non-farming occupations. Of course, in all the Nayakrishi villages all such households are not available, but an integrated relationship with non-farming occupations is needed for sustaining livelihood. In Tangail and Sirajganj, the weavers' best selling time for their clothes is the crop harvesting time of the farmers. The potters earn better if the seed keeping is done through earthen pots. The blacksmiths are happy to make different farming equipment and fishers are happy to find the water bodies free from poison.

There is always a substantial gap between the claim and the actual performance of an HYV variety in the farmers' field. The calculation of yield by the Nayakrishi farmers is done firstly not on a single crop based on monocultural calculation; secondly, the energy used as input and the energy produced as output are taken into account to bring the category of "sustainability" as the fundamental parameter to assess "productivity". Since the "high yielding" varieties consume more inputs or energy to perform than what they reasonably can produce, the terms "high yielding" is a misnomer. Thirdly, a biodiversity-based farming system responds to the diverse need of the community that cannot be satisfied by the increasing quantitative yield of a particular crop.

## Ten Rules of Nayakrishi

The situation of farmers in the late 1980s and early 1990s was already precarious where the farmers practicing conventional agriculture with modern seeds (HYV), chemical fertilizers, pesticides, and extraction of groundwater were fed up with the increasing cost of inputs and lower return on yields. Farmers were looking for an alternative. They were faced with the question of whether they want to go back to traditional agriculture or formulate a different practice that supersedes the modern agricultural methods; which dealt with the new emerging issues of biodiversity losses, ecological questions, farmers' rights, women's rights, food sovereignty – a lot of social, political and environmental issues. It was not just going back to old times, rather it was for future transitions. So Nayakrishi from the beginning was not just a technical transition from chemical-based agriculture to organic, but it grasped all the social, environmental, cultural, and political aspects of the farming communities.

The naming of Nayakrishi Andolon in the early 1990s was itself a challenge. It was when the global environmental and ecological movements were active before and after the

Earth Summit (1992) held in Rio de Janeiro, Brazil. The term “biodiversity” was heard first time by many environmental activists and the Convention on Biological Diversity (CBD) was in place. The name Nayakrishi (*Naya* means new, and *Krishi* means agriculture) evolved through discussions, debates, and analysis. With it, the term *Andolon* was added because farmers as individuals cannot change the situation that is dominated by corporate interests and global players. The farmers have to continuously fight against the transformation of agriculture to industrial agriculture and harmful technologies such as genetically modified seeds.

Nayakrishi Farmers follow ten simple rules, mirroring 10 fingers of their hands. The primary aim is to maintain and regenerate living and fertile soil, maintain and regenerate diverse life forms and eco-systemic variability and develop the capacity of the indigenous knowledge system to engage and appropriate the latest advance in biological sciences that could contribute to regenerating the planet, the earth system. These rules, since their initial formulation in 1997, are routinely reviewed based on new information, practical experiences, and learning. To be a Nayakrishi farmer, one must follow all ten rules. However, Rules 1 to 5 such as ‘absolutely

no use of pesticide or any chemicals' and 'learning the art of producing soil through natural biological processes' are compulsory. These are the primary obligations to be a member of the movement. Rules 6 to 10 are more appealing to farmers interested in developing more integrated and complex ecological systems not only to maximize the yield but to contribute to innovating interesting ecological designs demonstrating the immense economic potential of biodiversity-based ecological farming and strengthening the practical forms of resistance against globalization. The economy is considered the site where the social exchange takes place between life-affirming activities of diverse communities.

Resistance at the production level against criminalization and industrialization of food production is generally known as 'organic' agriculture. However, Nayakrishi Andolon insists that food production must be based on the conservation and regeneration of 'biodiversity', making a fundamental paradigm shift from 'organic' food production to 'biodiversity-based agriculture'. Agriculture is not industry and 'organic' food production that has developed in the industrial food production system within a capitalist market, dictated by the market demand, is still locked within the 'industrial', 'capitalist', and 'production' paradigm.

Agriculture is a source of livelihood, far beyond the notion of employment. Agriculture is integrally related to many other occupations such as potters, blacksmiths, weavers, fishers, etc. and it involves the entire family, not only one single person as the main breadwinner. Therefore, Nayakrishi is empowering women as they become the most important contributing members of the families.



**Farmers follow simple rules that could guide their production plan, accelerate the processes of life and define immediate and future goals. Agroecological tasks must be broken into simple steps that a farming household could easily follow. Nature unleashes all her hidden energy and secrets once we learn her language.**



# TEN RULES OF NAYAKRISHI

The farming practice of Nayakrishi Andolon follows ten simple rules. These rules are summarised in 10 statements adopted by the farmers themselves, mirroring 10 fingers of their hands. These are developed through day to day experiences and knowledge.

## **Nayakrishi Rule 1**

**Absolutely no use of pesticides and harmful chemicals**

## **Nayakrishi Rule 2**

**No use of chemical fertilizers and external inputs, encourage living micro-organisms**

## **Nayakrishi Rule 3**

**Keep seed in farmers hands; In-situ and ex-situ conservation of seeds and genetic resources in farming households**

## **Nayakrishi Rule 4**

**Stop the use of deep tube wells and extraction of groundwater**

## **Nayakrishi Rule 5**

**Produce cultivated and uncultivated food and manage spaces for both**

## **Nayakrishi Rule 6**

**Copy the forest and produce biodiversity.**

## **Nayakrishi Rule 7**

**Calculate total yield of the household, community and the eco-systems**

## **Nayakrishi Rule 8**

**All domesticated and semi-domesticated animals and birds are members of the farming households**

## **Nayakrishi Rule 9**

**Water and aquatic diversity are integral to agricultural practice**

## **Nayakrishi Rule 10**

**Re-integrating non-farming rural activities of potters, weavers, blacksmith, crafts and all forms of livelihood.**



Seed keeping, the most important task of women has been destroyed through the promotion of company seeds. Growing food by farmers is integral to keeping seeds for generations. Farmers regenerate and expand their biodiversity and genetic base. Threats to farming can come from agricultural policies and practices that deprive the farming communities of control and command over seed and genetic resources.

In simple terms, Nayakrishi, as a biodiversity-based farming system, is about both cultivated and uncultivated crops, plants, animals and birds, fish, and everything that comes under agriculture. Human beings are also part of Nayakrishi, which means the composition of farming households includes the birds and animals and the land.



***'If there is a name for the seed, then the seed exists somewhere. If it is not found in our village, it must be available elsewhere' -- Farmer Rabeya, Tangail.***

Strengthening and where necessary reconstituting community seed networks and knowledge practices are critical areas of Nayakrishi Andolon to meet the challenges posed by patenting and commercialization of seed and the immense threat of monopolization of seed and genetic resources by global corporate seed corporations. Nayakrishi Seed Network ensures the flow of seed and genetic resources among farming communities and facilitates the co-evolution of genetic traits by ensuring their regeneration.

## **Nayakrishi Seed Network (NSN)**

The most effective strategy of the Nayakrishi farmers, particularly those of women, was to emphasize seed preservation, collection, and regeneration of the local variety of seeds. They took a community-based

approach through the formation of Nayakrishi Seed Network (NSN) with the specific responsibility for ensuring both *in-situ* and *ex-situ* conservation of biodiversity and genetic resources. Farmers maintain diversity in the field, but at the same time conserve seeds in their homes to be replanted in the coming seasons. The NSN has three levels:

First, Nayakrishi Seed Huts (NSH) are established by the independent initiative of one or two Nayakrishi farming households in the village, willing to take responsibility to ensure that all common species and varieties are replanted, regenerated, and conserved by the farmers. However, Nayakrishi Seed Huts ensure that farmers have their collection of seeds in their households. The diverse varieties of seeds in the farmers' households are represented in the NSH, which they can share and exchange with each other.

Second, the Specialized Women Seed Network (SWSN), consists of women having specialized knowledge in certain species or certain varieties. Their task is to collect local varieties from different villages. They also monitor and document the introduction of a variety in a village or locality, and keep up-to-date information about the variability of species for which they are assigned. They



also watch if any harmful seeds are promoted in the villages, which they can resist.

Third, Community Seed Wealth Center (CSWC) is the apex center in the Nayakrishi Seed Network connecting the NSH and the farmers' households. It is an institutional set-up that articulates the relationship between farmers within a village and between villages, in other districts, and with national institutions for sharing and exchanging of seeds. The construction of CSWCs is based on two principles: (a) they must be built from locally available construction materials and (b) the maintenance should mirror the household seed conservation practices. These are located in one of the Biddaghors (learning centers) of UBINIG for seed collection, storage, preservation, distribution, exchange, and regeneration. The tasks of the CSWCs include documentation and maintenance of general information about the area.

Any farmer member of the Nayakrishi Andolon can collect seed from CSWC with the promise that after the harvest they will deposit double the quantity they received. In the CSWCs, there are at present (2021) collections of over 2700 rice varieties, and 538 varieties of vegetables, oil, lentil, and spice. The CSWC also maintains a well-developed nursery with indigenous species of fruit, timber, and medicinal plants.

In the CSWC, intensive interaction and sharing of knowledge and exchange of seeds are held among farmer women in each village or community, and thereby farmers progress significantly in conserving and reproducing local planting materials. Through the shift to the local varieties, farmers gained a lot of confidence to continue food production. The farmers' seed system contributed to seed and food sovereignty in the respective communities. For Nayakrishi, food sovereignty cannot be achieved without achieving seed sovereignty. They have the sovereign right to decide which food crops to grow to have the seeds in their control and not follow the market dictation.

Farmers of Nayakrishi Seed Network embed them in their day-to-day relationships with each other and with a particular environment and agroecological setting to ensure their biological existence. The striking character of CSWCs and Seed Huts is their capacity to augment the dynamic and cyclical relationship between in-situ and *ex-situ* conservation of planting materials that make farming possible, sustainable, and gainful. It is gainful for farmers to enhance farmers capacity to regenerate the biological foundation of farming and generate almost all the required inputs from farming. CSWCs are part of the Nayakrishi Seed

Network; therefore, farmer representatives participate in the decisions of the CSWCs.

The responsibility of the NSN is to ensure the collection, conservation, distribution, and enhancement of seeds/germplasm among the members, who are primarily women. The Nayakrishi Seed Network (NSN) builds on farming households, the focal point for in-situ and ex-situ conservation. Farmers maintain diversity in the fields, but at the same time conserve seed in their homes to be replanted in the coming seasons. Usually, the seeds that are kept for longer periods generally have lower germination rates, but the technology farmers use to preserve these seeds is varied and effective, both for a short and long period.

This is where women of the households assert their role and power and is the basis upon which Nayakrishi Seed Network (NSN) has been built. The individual plans and decisions are made into collective decisions through meetings and the collective sharing of information. Decisions are taken to ensure that in every planting season, all the available varieties at the farmers' households are replanted and the seeds are collected and conserved for the next season.

The Specialized Women Seed Network (SWSN) is very crucial in the Nayakrishi Seed Network. The specialization encourages individual women to be more focused on a few species/varieties and as a result, they develop valuable knowledge in a particular variety. Since this knowledge is highly valued by the group the person gets immense respect and recognition that contributes to the process of building up the collective spirit and knowledge sharing. They also monitor and document the introduction of a variety in a village or locality. They keep the information up to the date about the variability of species for which they are assigned. The SWSN members often share information in large meetings.







## Community Seed Wealth Centre (CSWC)

**C**ommunity Seed Wealth (CSW) center is the institutional setup that always explore to articulate the relation between the village and national concern for biodiversity and genetic resources, including the National Gene Bank. The CSW also maintains a well-developed nursery. Any member of the Nayakrishi Andolon can collect seeds from CSWC with the promise that they will deposit double the quantity they received after the harvest. The seeds are sold to other farmers of the village and the cost of the CSWC is maintained from the income. Farmers can claim the deposited species or a variety at any time they want. All they need is to walk to the nearest CSWCs. A farming household can decide not to replant a species or a variety in a season but may come back after two to three years for the same.

Apart from seed collection, storage, preservation, distribution, exchange, and regeneration, tasks of the CSWC also include documentation and maintenance of overall information about the area. The Community Seed Wealth center receives germplasm from the NSN. These are registered and relevant information is kept. To facilitate communication with the National Gene banks the accession data is kept following the standard practice.



**Clay pots produced by potters are needed for seed storage.**

**Traditional processing of seed keeping is also part of livelihood of rural communities**

Continuous research is being done on the traditional processing of seeds for storage. The storage technique depends on three factors: (a) container, (b) drying technique, and (c) constant monitoring of the weather. Management of seeds in the container does not require complicated technology. Usually, dried Neem leaves are used and containers are sealed with mud and cow dung.

Women were and still are very confident about their knowledge and role in seed preservation. This is found among the Nayakrishi farmer women. They exactly know all the characteristics, even of those, which are endangered and not grown in the area anymore. In a small research on women's knowledge and practice of seeds in four areas, the information received from women (2006) showed that women know the seeds a. which are available locally, b. which are cultivated in the field c. which are introduced from outside (including HYV and Hybrid) and d. those that are disappearing or have disappeared from their area. For example, they gave information about 52 rice varieties that were in their knowledge, but not grown anymore, compared to 35 varieties grown in the field and 21 HYV-introduced varieties. For vegetables, they had knowledge about 73 different vegetable varieties not grown anymore, and 49 different vegetable varieties grown and introduced in the area. That is, more seeds are in the knowledge of women and much less about the introduced ones, as they do not preserve those seeds. Seeds in their memory and knowledge are termed *Gayner Beez* or Seeds of Wisdom. Many women could exactly describe the seeds they named and even say whether they have seen them in the last ten to fifteen years. Most of the seeds that were categorized as seeds of wisdom were apprehended to be lost in that area during the last ten years. However, women had much confidence that the seed must be available in some other area, maybe in another name.

Women were also confident that the seeds that are in their knowledge can be identified by them if they see those seeds among thousands of other seeds.

Farmer Rabeya said,

‘The seeds are like children, we can find them from anywhere they are available.’

In a workshop held in Tangail during January 30 – 31, 2006 this practice was done for Seeds of Wisdom. Some could find the endangered seeds in the Community Seed Wealth Centre. This was a very interesting exercise where a lot of seeds that were identified as seeds of Wisdom in one area were categorized as local seeds in another area. The farmers felt that the seeds were not lost at a time from all the areas. The loss was a gradual process and most of the time happened after natural disasters. They lost the seeds that they preserved and then got seeds from outside or from a different market.

Women could name certain varieties of potatoes, which they thought had been lost over a period of 40 years. The older women gave this information. Mallika Begum of Bag Hasla village said:

“We had several varieties of potatoes such as Kukri, Khetor, Surjo Mukhi, etc. We do not see these potatoes anymore”.

It was very clear from the discussions that the major causes of the loss of seeds were the introduction of HYV and Hybrid seeds. Women distanced themselves from such acts.

‘We have never bought hybrid seeds from the market. But our husbands did. And then they bought the chemicals and destroyed everything.’, said Mallika Begum, Baghasla, Ishwardi.

Cash crops such as the local varieties of sugarcane were lost. These local varieties of sugarcanes had beautiful names, such as Mesri Dana, Gendari, etc. Many of these local variety sugarcanes were eaten raw which is soft and sweet. They made molasses in their own homes. A sugar cane had the name Akhash Dhor-Dhor; *Dhor* meant touching the sky. That means the sugar cane was high enough to look like catching the sky. It was one of the favorite sugar cane varieties in the Pabna and Kushtia areas. Once the Sugar Mills started controlling production, these varieties were not produced anymore.



## Struggle Against Invasive Seeds

As a movement, the actions of Nayakrishi Andolon are to mobilize farmers against invasive seeds such as Hybrid, GMOs, and any other technological aggression against the farmers’ seed system. The slogan “Sisters keep seeds in your hand” is central to the movement. Nayakrishi farmers have been resisting the promotion of genetically engineered crops like Bt brinjal and Golden Rice and have been successful in raising concerns on biosafety grounds. They also resist these technologies because they are patented by the companies like Monsanto (now Bayer) and Syngenta. [ For more information, see [www.ubinig.org](http://www.ubinig.org)]

### Hybrid Seeds

In vegetables, most of the introduced vegetables such as cauliflower, potato, cabbage, tomato, chili etc. are either HYV or hybrid. UBINIG researched the introduction of hybrid rice. Farmers familiar with HYV varieties of rice know the differences in cultivation practices between the local varieties and HYV varieties.



They know about their performances and already had many negative experiences. In the new situation of introducing hybrid seeds, the first reaction was confusion that both HYV and hybrid claimed higher productivity. But soon the differences between HYV and Hybrid became clear that with hybrid, farmers cannot save the seeds for the next crop; they have to purchase them from the market and also have to use pesticides.

The promotion of hybrid rice happened initially through two processes: a. Import of Hybrid Rice seeds through the private sector and b. Development of Hybrid Rice through Government Research Institutes. Hybrid rice seeds were known as imported seeds. Besides the Traders, micro-credit offering NGOs (such as BRAC), that work with the poor, became the agents of hybrid seed importers. At the government level, research and introduction of any new variety of rice is the responsibility of the Bangladesh Rice Research Institute (BRRI). In 1995, one BRRI scientist objected to the import of hybrid rice seeds, as no testing was done before the import. BRRI also claimed that there were some HYV rice varieties, introduced by BRRI that had more productivity than the imported hybrid rice. These were the BRRI variety, BR-29, BR-11, BR-16, and BR-18.

The objection was also on the argument that the HYV rice seed can be preserved at the farmer's level, while hybrid seeds cannot be preserved. The criteria of farmer's seed saving was given priority in the decision about introducing any new seed variety. Till that time, BRRI developed 41 different HYV rice varieties and was trying hard to develop its hybrid rice variety. On 9th July 2001, the Ministry of Agriculture permitted the marketing of BR-Hybrid-1. Later on, the Technical

**Nayakrishi farmers resist hybrid seeds because these cannot be saved. They need to buy from the market.**



**“Seed Keeping is My Right”**

Committee of the National Seed Board approved the seed for marketing. This paved the way for commercial seed importers to import hybrid rice seeds.

Several brands of hybrid rice were imported by private seed traders such as Alok-6201, Loknath 50, Amorsri-1, and Sonar Bangla. This shows that the introduction of hybrid seeds was not limited to the government; it was promoted more through private seed traders. The government approval helped the private traders to legitimize the imports.

IRRI has initiated a project from 1999-2000 to introduce hybrid seeds through Poverty Alleviation organizations. Poverty Elimination through Rice Research Assistance (PETRRA) was a 9.5m GBP five-year project (1999 – 2004) funded by the UK's Department for International Development (DFID) and managed by the International Rice Research Institute, in close partnership with the Bangladesh Rice

Research Institute (BRRI), and Ministry of Agriculture. They targeted poor rice farmers to accept hybrid rice seeds. Women were particularly targeted as they were major recipients of micro-credit programmes. NGOs which were involved in PETTRA were BRAC, CARE, Grameen Krishi Foundation (GKF), and Proshika — all of them were known for using micro-credit to push the hybrid seeds to the clients.

## Struggle against GMOs

In addition to the reasons for which GMOs are opposed globally, the peasants of Bangladesh have their unique position to fight against it: GMOs directly threaten their present practices and interest, without offering any agronomic value. Farmers have already demonstrated a better way to enhance both productivity and agrobiodiversity.

The corporate effort to introduce Golden Rice, the genetically





modified rice enriched with Vitamin A is seen as an assault on the ongoing experiments, innovations, and successes of the peasants. Note that there is no support from the government for ecological agriculture and there are hardly any environmental and ecological concerns of the government that are meaningful to the farmers. The bio-safety regimes are absent and there is an alarming lack of awareness about the 'precautionary principle' among scientists. The Nayakrishi farmers have rejected the claim of the promoters that Golden Rice will solve the problem of VAD deficiency. There are many vegetables, spinach and fruits that are high in Vitamin A content. They are confronting Golden Rice and all the propaganda around it as an invasion against the farmers' efforts to ensure food and seed sovereignty. The desperate corporate trickery to claim that Golden Rice is a 'gift' to the people of Bangladesh has also been exposed.

To the peasants, GMOs are '*Bikrito*' entities – something that is not natural, absurd, degenerated, and potentially harmful. To the Nayakrishi farmers, 'Golden Rice' is known as '*Bikrito Dhan*' – an unnatural and absurd variety of rice. Any sane human being never mutilates a natural entity but rather appropriates the evolutionary power of nature in maintaining the integrity and the unity of the evolutionary product. In a country rich in cultural and linguistic metaphor, the term '*Bikrito*' has a very strong connotation in the Bangla language and can never be captured by terms such as 'genetic engineering'. Peasants are for constant innovation and discovery. By making '*Bikrito Dhan*' through a distinctly different type of absurd operation, the innovative capacities of humankind are compromised. Farmers are arguing that Golden Rice is not an

innovation but a product of pathological corporate projects that intends to replace natural forces with 'experimental laboratory' operations controlled by corporations. A person is insane (*'Bikrito Mostishko'*) implies that he/she no longer can cope with reality and is trapped in the glasshouse of his/her mind. This is what the 'Bikrito' scientists are toying with 'Bikrito Dhan' with corporate support. This is very important to recognize the vocabulary through which farming communities are resisting corporate propaganda.

Bangladesh has been a target country for the Bt brinjal (eggplant/Aubergine) under the Agricultural Biotechnology Support Project II (ABSP II). The introgressions of Bt gene into 9 Bangladeshi local variety brinjals were done at MAHYCO, (Maharashtra Hybrid Seed Company) the Indian company, using their lab facility. MAHYCO has received the application rights of the Bt cry1Ac gene technology from US company Monsanto). The Bangladeshi varieties were backcrossed at MAHYCO with transgenic brinjal containing Cry1AC. This means that there was hardly any scope for knowledge and technology transfer from MAHYCO's proprietary technology to the scientists working in public research institutions of Bangladesh.

The Bt brinjal is actually a clear piracy of the local variety brinjals to be genetically modified for patenting by Monsanto-Mahyco partnership.

In 2013, the approval for four BT brinjal (1,2,3 and 4) for field cultivation was given by the National Committee on Biosafety (NCB) which was resisted by Nayakrishi farmers and UBINIG. UBINIG also monitored the field cultivation of the farmers and found that it was not successful at the farmers field level. Farmers incurred economic losses. Yet farmers are forced to take the seeds. [see [www.ubinig.org](http://www.ubinig.org) for more information]

Attempts are also being made to get approval for Bt Cotton. The Bangladesh National Technical Committee on Crop Biotechnology (BNTCCB) of the Ministry of Agriculture at a meeting on 16 June 2022, gave the green signal to two Bt cotton varieties for final approval from the National Committee on Biosafety of the Ministry of Environment (MoE). UBINIG and the environmental groups have protested against such initiatives of approval.

The struggle continues.