

AGRICULTURE DEVELOPMENT
HAS TO BE HASTENED,
MAKING DRY FARMING
THE SECOND FRONT
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*Farming is no more a simple "way of life."
It is now a key economic segment, under development,
Since the first goal of development is poverty alleviation.
But, this development has not found the right track.
For, there is no development without change;
Changes in farming result only when farmer begins to change.
And, farmer is not yet the focus of development.*

There is a pervasive impression among the concerned that the pace of agricultural development in the country is rather slow. Poverty is still unacceptably high. Most of this poverty persists in the rural areas. This poverty cannot be alleviated, as some people think, just by transfer of income from other sectors. The reality is that in India, the farm sector is much larger than the nonfarm sector. A better route for alleviating rural poverty is not merely the rapid development of the non-farm economic segments like industry, trade and service, but also the rapid development of the farm sector. This ensures better farm incomes. India seems to have missed its steps here. A perusal of policy and programme making, that overlook the ground realities, confirms this.

Then, are there some blind spots?

1. **Assumption that Green Revolution (GR) suits the entire farm sector.** Of course, GR did enhance food production in the country, which is a historic reality. But, one must not miss the point that it did not benefit the entire farm sector. Also, for the first time, money investment in farming became necessary with GR, for the purchase of expensive external inputs. Then, who gains from GR? Among the farmers, the top layer, having better social status and economic resources, wider contacts and superior managerial ability got the benefit from the GR. Also, the revolution did not reach the middle and lower level farmers, nor did it benefit the dry farming areas. Thus, there is now a big development gap. Attention to dry farming seems to be the present need. To tap the potential in dry farming, a different bunch of technologies is required. Similarly, to reach the middle level farmers, not known to be keen "information seekers", a different kind of extension approach is necessary. In fact, if focus on *assured farming* is the **first front** of agricultural development, improving *rainfed farming* is the **second front**.
2. **Belief that GR extension approach suits all segments of farmers.** Those who are handling agriculture development without the basic knowledge of rural society easily assume that the adoption behavior of farmers is the same at different levels in the farming community. Thus, they don't see the difference between the top level and middle level farmers in accepting and adopting new technologies from external sources. But, in reality, the top level farmers are mostly innovators, while the middle level farmers remain as conservatives. In the normal socio-economic dynamics, the top level comes to acquire most of the assured farming areas and better economic status and is seen to have entrepreneurial abilities. But, the middle level farmers develop a mind-set of living within the available means as their destiny and have low levels of aspiration. Hence, working with these two levels requires different extension education approaches.
3. **Suitable means to reach farmers with external farm knowledge is not setup.** Traditional farming was essentially a self-contained system – with seed coming from the previous harvest, manure from farm and domestic wastes and the labour from the joint family. In traditional farming, usually there was no external knowledge or large money investment. Also, since the young in farm family did not come with in-born farming knowledge, they learnt the basics from the elders in the family and the community. It is not so now. With the green revolution, external source of knowledge has become important. As such, in order to relate external knowledge to the local needs, problems

and opportunities, a linking agency like an **agriculture extension system** is required. In fact, the absence of an extension system is felt more keenly now, as tapping the potential in dry farming, is more difficult, while preparing middle-level farmers needs more intensive extension efforts. Add to this, the present-day problem for literate farm youth getting initiated into present-day farming. Rural youth form the bulk in the general education stream. A majority of them become drop-outs below degree level and return home. Then, many of them do not get initiated into farming by the elders who remain strangers to the existing farming mix. Also, the District Agricultural Schools and Farmers Training Centers have disappeared.

4. **Overlooking the role of mixed cropping practice in dry farming.** The present thrust seems to focus on specialized cropping. In the past, in a dry district like Kolar, rainfed farming provided almost everything the family needed, except salt and pepper. By sowing time, the food stocks in a family get usually exhausted. So, the mixed cropping system generally has a grain crop harvested in about hundred days. Thus, the system would include both early-maturing and late-maturing crops. This also served another important purpose of coping with the erratic rainfall – when early rains are good, the early crops came home; or, if the late rains are good, the late crops give good yields. It was a very practical strategy to cope with an uncertain rainfall pattern. The cropping system would also include shallow-rooted crops like groundnut, along with deep rooted crops like red gram, again serving a very practical goal of making best use of available moisture at different levels. Further, the cropping system would have both legumes and cereals. The leaf shedding and nodule forming legumes enrich the soil. Since dry farming is totally dependent on the rainfall, the traditional farming system, evolved with ages of experience a mixed cropping system. **It included short and long duration crops, deep and shallow rooted crops as well as cereals and pulses.** This was mainly designed to cope with an unpredictable rainfall. These ideas are rarely found in present day projects.

Is there a more rational approach to development of dry farming?

Any development strategy is really a process of adopting solutions to identified problems. Thus, it is necessary that the problems in rainfed farming are properly defined, along with specific goals and strategies. The public projects in this regard, generally, ignore the ground conditions, seeking to push “technology demonstrations”, unmindful of cost-effectiveness or manageability. Also, there is no in-built approach in public undertakings to look around and learn from people’s own initiatives. Karnataka has some considerable experience with some NGOs (MYRADA and BAIF). In the last two decades, AME Foundation (Agriculture, Man, Ecology Foundation), an Indian NGO emerging from an European venture, (devoted to sustainable agriculture, middle level farmers in dry farming) has established, in a NABARD Project, some simple measures to improve dry farming. Rainfed farming, (known to be a fragile eco system in contrast with assured farming areas), depends heavily on the environmental conditions. Hence, the dry farming development strategy leans more heavily on rebuilding the ecological conditions. The dry farming conditions are quite harsh in Karnataka. An approach found useful here can be an adjustable basis elsewhere.

Development of rainfed farming in Karnataka, as a case.

In 2010, AMEF secured a NABARD dry farming development project with some practical goals including (1). Augmenting productivity in lead crops, (2) Production of quality seeds, locally and (3) Organising farmers groups and Training farm youth.

Kolar is the eastern-most dry district in Karnataka, with a low rainfall pattern. Bangarpet which is a well-known dry taluk of the district was chosen by AMEF for the NABARD Project. It started with five villages and later expanded to ten villages. Average annual rainfall is 701mm. **Since yield improvement was the keen desire of the participating farmers,** it became the central goal. The taluk experienced drought in the last two years in the Project. Even then, the eco farming performed better than the conventional farming system. The Project Objectives are:

1. Organising Eco Farmer Groups (EFGs) as entry points to the village community
2. Organising quality seed production of the selected crops, locally

3. Promoting Low External Input Sustainable Agriculture (LEISA) practices to reduce production costs
4. Selecting, training and involving selected literate farm youth as Promoters of Eco farming in the locality

Performance of the lead crops in the Project period

2010-11 *Normal year* Rain fall 1016/701

	Villages	Farmers	ac	Local Yld q/ac	Project Yld q/ac	gain%
Ragi	10	208	221	8.5	12.5	48
Redgram	7	40	15	3.5	6.0	71
Groundnut	5	10	5	3.5	5.5	57
Rice-SRI	5	70	40	25.0	32.0	28

2011-12 *Drought year* Rain fall 613/701

	Villages	Farmers	ac	Local Yld q-ac	Project Yld q-ac	gain%
Ragi	10	387	485	6.30	9.50	50
Redgram	7	23	16	1.25	2.75	120
Groundnut	5	105	71	1.36	2.89	112.5
Rice-SRI	5	78	52	18.80	30.33	61

2012-13 *Drought year* Rain fall 619/701

	Villages	Farmers	ac	Local Yld q-ac	Project Yld q-ac	gain%
Ragi	10	606	505	6.5	8.5	30.7
Redgram	10	32	18	NA	NA	NA
Groundnut	10	302	128	1.25	2.5	50
Rice-SRI	10	30	20	NA	32.5	NA

Source: Quarterly reports submitted to NABARD (2010-11, 2011-12, 2012-13)

What was the strategy adopted to make these gains?

Professionals working with farmers will quickly perceive two basic conditions, here. One, the farmers here are considered “localites,” being conservative middle level farmers. They generally are not familiar with the world beyond. They like to live within their means. With their low aspirations, to get them to accept and adopt modern practices in farming is extremely difficult. Since they believe firmly in destiny, it is critically important to convince them about the value of the advocated practices, by winning their confidence. Also, since dry farming means working with a **fragile eco system**, where the returns are not assured, and large investments either in the form of land-shaping activities or purchased inputs are not easily acceptable to farmers, to begin with. In these circumstances, the development approach had to walk on two legs – **one**, simple **alternative farming practices** and **two**, **mobilizing social initiatives** to support development.

Under these circumstances, AME in consultation with university scientists formulated a tentative approach to dry farming development, in the shallow, un-retentive soils in the project area. This approach was further discussed with the farmer groups in PRA meetings. Essentially the approach was to deal with **three major on-farm limiting factors** and **one major off-farm environmental limitation**.

Limitaion One: Moisture stress in the root zone of shallow rooted seasonal crops during the dry spells.

Measure 1 – Ploughing across the slope, starting with early rains, minimising runoff and

maximizing infiltration.

Limitation two: Depleted soil productivity due to continuous cropping and erosion.

Measure 2 – Upgrading the soil quality with application of tank silt for one part of the farmland at a time.

Measure 3—Adding, year after year, copious quantities of organic manure.

Measure 4 – Re-doing anti-erosion measures on a regular basis.

Limitation Three : Monsoons being erratic, unable to predict the rainfall pattern

Measure 5—Adopting a resilient mixed cropping system evolved over ages. It combines early-maturing with late maturing crops; combines shallow-rooted with deep-rooted crops; and combines legumes with cereals.

Note:- If early rains are good Same is harvested, or if late rains are good RAGI comes home. While a shallow-rooted crop uses the moisture in the upper layers, the deep-rooted crops avail the moisture below. A legume crop, with its leaf shedding character and root nodules enriches the farm soil to a certain extent.

Limitation Four: Degraded environment in dry farming areas.

Measure 6 – Increasing the tree crops in the terrain, trees being nearly 60% water, helps in maintaining humidity level in the air. Also, the bee and bird population helps in pollination and pest control. Further, creating within the terrain, small surface water bodies by impounding rain water in the depressions helps in maintaining humidity for a few weeks beyond the rainy season.

In adopting these six measures there is a definite rationale. Two factors count, here. One, as already stated, dry farming is a fragile eco system. Apart from poor soils, rainfall is also erratic, causing crops to suffer. Therefore, the development measures must be taken in relation to these factors. Otherwise, even the lower yields the farmers were getting earlier will be lost. This nobody likes. Hence, too sophisticated technologies, that are risky, are carefully avoided. Second, these are middle level farmers. In their social status, economic resources and management abilities, they are not equal to the GR farmers. If they lose one harvest, they may face starvation for a full year. As such, the farmers prefer no-cost or low-cost and non-risky measures. Hence, the improvements suggested here are mostly low-cost **alternative farming practices** and just one step beyond what the farmers are already practicing. This approach is deliberately formulated for working with dryland farmers.

Lessons learnt from the Project

1. Rapid agricultural development is not only necessary but is also possible.
2. The farm sector is not one uniform production base. It has two distinct production segments, **Irrigated and Assured farming area** and the **Rainfed dry farming area**.
3. Dryland farmers are not equal to the top-level innovative farmers. They require as middle level farmers a different package of practices and extension education approach.
4. Development of dry farming requires the formulation of **separate vision and mission**, different from that of GR era.

5. To start with, no high-sounding technologies are suitable. Farmers are shown a couple of **Alternative farming practices** to be tried in combination with their own farming practices in an exercise called **Participatory Technology Development (PTD)**. From this experience they gain confidence in the new practice and share the betterment.
6. Having no regular Extension Agency, AME formed Eco farming Groups (EFGs) to start with and trained local educated farm youth as Sustainable Agriculture Promoters (SAPs) and made use of them as village volunteers.
7. Opportunities need to be created throughout the project period for farmers to collectively discuss, evaluate and accept the suitable new practices in their regular farming system.
8. Focusing on development of dryland farming serves many purposes: supporting better livelihoods for the farming majority, better household access to nutritionally rich millets and pulses in the food basket, and an eco-friendly farming system.
9. A further noteworthy point is that the dryland farmers are mostly small and poor farmers, and it is seen that the public programmes generally link up these farmers with some external corporate agencies for seed, fertilizers or farm machinery which may degenerate into an exploitative relationship, with farmers coming to suffer. On the other hand, the approaches of NGOs have been generally to **empower the farmers** to upgrade their farming practices within their circumstances, which is sustainable.
10. Agricultural development is a practical solution to rural poverty in India.

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