Pastureland and Water Bodies

Common Grazing land (Common Pastureland) Development Initiative

GVNML had to encounter challenges with regard to restoration and management of natural resources on one hand and social issues such as encroachment of common property on the other. Instead of seeking a legal recourse, GVNML applied a strategy to instill sense of ownership i.e. belongingness and community cooperation for equitable distribution of benefits and this worked well. Soon community participation and voluntary contribution had gained momentum in restoration efforts.

Village community was mobilized and motivated through various programmes/ activities such as nukkad naatak, puppet shows etc.. Creating awareness amongst community members was essential and its gradual spread was ensured by organising and conducting "pad-yaatras", rallies, gramsabha and ward sabhas, which eventually have led to improved community participation. Formation and strengthening of village level institutions and engaging gram panchayat representatives have given legal sanctity to conservation efforts. A multi-stakeholder approach has been followed for effective and active participation. Sharing of responsibilities among the members thus led to building of ownership.

Reviving the cultural practices that once existed made community to rediscover and realize the importance to revere resources thus inculcating value system. People-centered governance system slowly began to find its place and community voluntarily made rules to govern and maintain resources for holistic development of the village.

Soon the spirit of "shramdaan" and protection and conservation of village resources has spread to neighboring villages and area of operation increased from 40 to 3300 number of villages by 2015. Accordingly, the strategies and approach adopted/ followed have been modified too though the overarching principles continue to be the same. While staying focused with natural resources management (NRM), as the core strength, GVNML moved on to diversify and entered new thematic areas. Various projects that GVNML deal with vary in range from NRM, drinking water, sanitation and health, land reclamation and livelihood solutions and improvement.

After all this background a new challenge came up that which technology to be applied to restore pastureland because this is grazing land so the primary purpose should be enhanced and the basic problem of none availability of moisture after Mansoon can be dealt. After a long series of discussion and visiting technical institutions including universities, Govt. line-department and other technical institutions, nothing found suitable for the proposed plan, thus experiment on ground started in 1988. And 5 years rigorous efforts made towards the goal, "Chauka System" fund suitable for the reclamation of Pastureland. Details of Chauka system given below:

Chauka System

Rain Water Conservation Technique: Plan of Execution

Background:

Necessity is the mother of innovation. The severe drought of 1977 in Rajasthan affected the livelihoods of rural communities and several poor families started migrating to nearby towns in search of work. Moved by the situation, Laxman Singh—an ordinary but progressive resident of Laporia village—mobilized the youth under the banner of Gram Vikas Navyuvak Mandal, Laporia (GVNML) to address the immediate need—water. After several rounds of discussions and meetings, the group undertook a project for the renovation and augmentation of water resources.

The breach in the village tank was repaired in the year 1980 and in the next 10 years, three tanks in the village were revitalized. The initiative also helped improve the overall agricultural production and drinking water resource in the village. But the 2nd main source of livelihood "The animal rearing" remained unimproved because the basic grazing source "Pastureland" is degraded, over exploited, over grazing, soil erosion, illegal mining, tree falling (continuously cutting) so after 5 years of experimenting on ground by developing bunds of different sizes for rain water conservation and development of vegetation simultaneously. Finally a technique was shaped for further replication.

Evolution of Chauka

Rajasthan's one of the major sources of livelihood is Animal husbandry but its main problem is grazing and drinking water. Taking cognizance of this, GVNML initiated a massive programme for rejuvenating village common pasturelands that over the years have become completely degraded due to collapse of management systems. The long-term objective of this programme was to develop village commons as a base for fodder resources and demonstrate that village commons can be developed and made productive by applying simple technology.

In order to design and develop an appropriate technology especially suited to rejuvenating the vegetal cover on village common lands and to improve their ecology in arid and semi-arid regions, GVNML went through the following process:

- GVNML field workers consulted a number of scientists at various institutes in Rajasthan, such as the SKN College of Agriculture, Jobner (Jaipur), the Central Sheep and Wool Research Institute, Avikanagar (Tonk) and the Central Arid Zone Research Institute, Jodhpur.

- They also visited a number of watershed development project areas where the Directorate of Watershed Development and the Forest Department of the Government of Rajasthan have made intensive efforts to improve the vegetal cover of village common lands.

- GVNML workers had already studied the recommended designs of earthen bunds and other in-situ rainwater conservation measures, such as contour trenches, staggered trenches and 'V' ditches, but found them technically unsound for their purpose and unsuited to the socio-economic status and grazing systems of the working areas.

- Keeping in view the recommended in-situ rainwater conservation techniques, existing socio-economic, physiographic, demographic, soil and climatic conditions of the region, GVNML made concerted and collaborative efforts to develop a system viable under the existing circumstances. Ultimately, GVNML workers designed and developed a unique and ingenious technique locally called the ‘Chauka system’.

The Chauka system is an in-situ rainwater conservation technique to rejuvenate the available degraded grasslands/pasturelands or common *charnot/gauchar* lands of the villages in arid and semi-arid regions. It is a distinct departure from the conventionally recommended rainwater conservation measures. During the recent field surveys conducted by the team documenting this Chauka system, it was observed that the technique fulfills all the desired parameters of an ‘innovative’ technology.

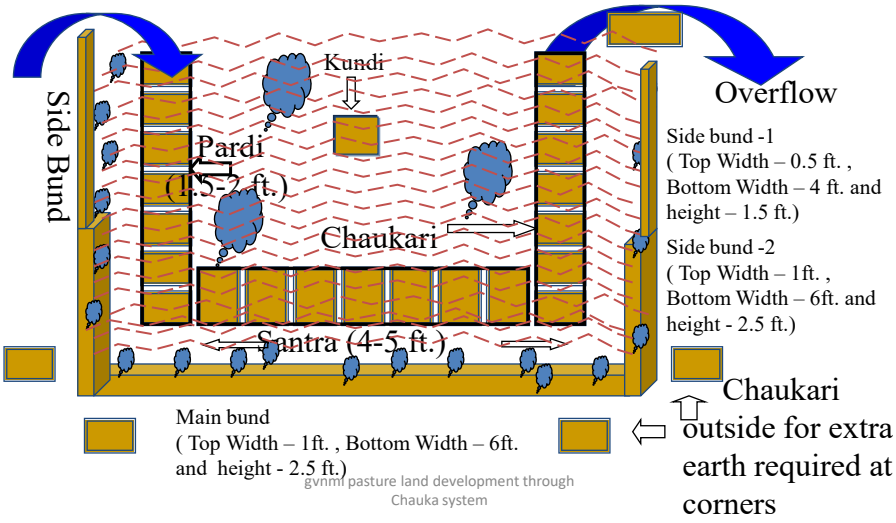
What is Chauka ?

‘Chauka’ literally means a rectangular enclosure, a small gradient enveloped by earthen bunds or dykes on three sides to provide perfect provision for the safe disposal of excess rainwater from the upslope side.
Chaukas are constructed across the slope at a predetermined spacing for intercepting the runoff and retaining it on the greater part of the field till it is absorbed. Recommended water depth in the Chauka is 9 inch at the full depth point and that is at the main bund while at upper level along with the side bund water depth is

"0" so it is 0 to 9 inch depth of water filled in Chauka. If the land slope is 1% (1 ft. depth in 100 ft. length) the side bund would be 100 ft. in one side and 90 ft. on other side. Main bund can be 100 ft. in length. Height of the main bund is 2.5 ft. by giving 1 ft. top and 6 ft. bottom while side bund is same for 50% length means 50 ft. remain same and after 50 ft. it is reducing to 0.5 ft. top and 4 ft. bottom and 1.5 ft. height.

In the absence of the Chaukas, this water would otherwise be lost as runoff, carrying along with it the finer, fertile sediment rich in organic matter. Over seeding of improved grass and fodder tree seeds is also an integral part of the Chauka system. In all, the Chauka system is a unique method that helps in soil and water conservation, leading to the regeneration of improved grasses and fodder trees.

Outline of CHAUKA SYSTEM



Use and Functions of Chauka

The innovative Chauka system has been found to be very effective in performing the following functions:

- It helps to break up a long slope into several short ones. This reduces the velocity at which water runs off, to less than the velocity at which it would cause soil erosion.
- It intercepts the runoff and retains it on the greater part of the field.
- It helps to increase the duration for which water stays where it falls, thereby allowing more runoff water to infiltrate, be absorbed in and be held in the soil profile.
- It allows for the draining of excess water at a safe velocity to avoid soil erosion, and for storing or harvesting it in ponds or *naadis* for future use both as surface or ground water.

- It helps to maintain and regenerate adequate natural vegetative cover, including grasses, shrubs and trees on the soil, for controlling soil erosion and enhancing the grazing potential of the existing degraded pasture and grassland in the area.
- It prevents erosion in downstream arable lands, improving their moisture regime and increasing ground water recharge.
- It helps to reduce sedimentation of water harvesting structures.
- It improves the water availability during scarcity periods and in drought years.
- It effectively utilizes marginal lands or wastelands in the area.
- It ensures the maintenance of the ecological balance.
- It helps to stabilize income even under unfavorable weather conditions.
- It helps in maximizing the combined income from the inter-related crop-livestock-tree-labour complex over years.
- It provides field-to-field (Chauka-to-Chauka) free access to people to animals for undertaking required operations and comfortable grazing.

Suitability and Models

Throughout arid and semi-arid regions, a wide range of systems and techniques for soil and water conservation is used, but experience has shown that they do not always transfer well from one set of conditions to another. The selected method or practice has to be compatible with the local socio-economic and other conditions. Further, the adaptation of a technique is greatly influenced by the agro-climatic conditions of the area. Similarly, the selection of a site-specific technique or model of soil and water conservation is also an important issue, which mainly depends upon the soils and slope conditions of the area. The Chauka system too, keeping in view the available methods of its implementation and technical specifications, is most likely to be effective in certain suitable agro-climatic zones/districts and certain conditions.

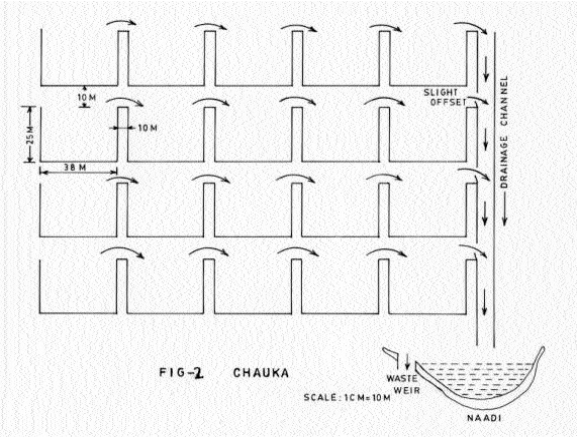


FIG-2 CHAUKA

Models of Chaukas

According to land slope different models of Chauka can be constructed, three types of model available in Chauka, details and suitability of each model given below:

Model-I Simple Chauka: This first model is generally constructed in uniformly sloping grasslands with an unidirectional slope of a maximum of up to 1.5 percent only.

Model-II Chauka with Waterways: This second model of Chauka is the most effective and

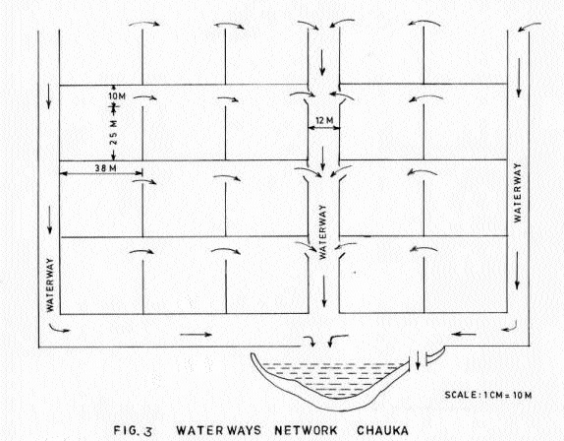


FIG. 3 WATER WAYS NETWORK CHAUKA

appropriate model in all those areas where natural drainage lines or waterways already exist. These waterways can be used effectively to drain excess runoff from the Chauka. If natural drains are not predominant but the area is uniformly sloping (a maximum of up to 2 per cent), this model can be executed by creating waterways.
This model is more cost-effective than other models for slopes up to 1.0 percent, but it cannot be applied on lands with undulating topography and uneven slopes.

Model-III Staggered Chauka: The third model is constructed in those areas where the topography is undulating and the slope is uneven. This model can be executed on lands with an uneven slope of a maximum of up to 3 percent. The selection of the appropriate model for the construction of the Chauka is very important. The model is finalized after complete investigations and keeping in view the condition of the land. In the main bund of each Chauka a small offset of 1.5 to 2m is generally given to facilitate the quick and easy flow of water from the side bunds. Each side bund of the last Chauka which joins the waterway or drainage channel is inclined inside, whereas the upper side bund is extended up to 3m towards the direction of flow in the waterways in order to prevent runoff coming from the upper reaches from entering the Chauka.

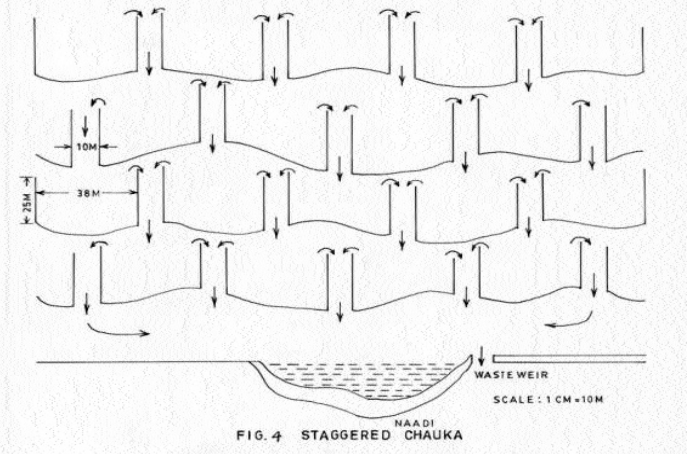


FIG. 4 STAGGERED CHAUKA

PEOPLE'S INSTITUTIONS
In the context of development and cooperation, it is essential to organize the community once it gets mobilized and motivated enough to get started. Before organizing the community, it is necessary for the development worker or organization to be clear about why it is necessary to organize, how to organize, what would be the role and responsibility of the people's institutions to be promoted, strengthened and sustained, and how such institutions will function and operate for the Chauka system to be successful.

The community has to be involved through several series of meetings. As a guiding principle, it is essential to follow participatory processes for equitable use and distribution of benefits from the village common pasturelands. The community is empowered through adopting and following participatory processes and can take decisions by consensus also.

Challenges faced

1. The economic growth of poor section of the community by Chauka system stopped or reduced the business of some village level money lender and these money lenders oppose or have raised conflict many times by getting some local level politicians.

2. Encroachment of common land is one of big issues when we developed the pastureland through Chauka and these encroachers have often get indirect support of political leaders.

3. Many times and in many of pasturelands we have laid down layout of Chauka system and constructed Chauka system but at same time or may be later different kind of soil and rain conservation intervention through govt. support has disturbed plan and design of Chauka system. So our People's institution take care such disturbance.

<u>Some actual photographs taken from Laporiya village where Chauka applied</u>

Water Bodies

Following types of Water Bodies normally found in GVNML project area and we have built and repair these structures in our working area:

1. Talab
2. Naadi
3. Roof Rain Water Harvesting Structure (Taanka)
4. Anicut
5. Dam
6. Med Bandhi (farm bunding)
7. Naada (Farm Pond)
8. Canals (Feeder and Supply)
9. Kund
10. Bawadis and Jhalaras

Construction of Water Harnessing Structures: Rajasthan is water scarce state in Indian continent. The erratic rainfall conditions and changing temperature make the situation more critical. In such situation, long term mitigation initiatives like construction of water harvesting structures play an important role. The organization has played an important role in the construction water harnessing structure in its project area. These structures are of various kinds listed above used for recharging ground water, gravity flow and power lifting irrigation, animal drinking and other domestic use of water for local residents. Their numbers are as described in below table. These structures not only meet the requirement of the local human and livestock population but also improves the quality of aquifer water as well.

Soil Moisture Conservation on Privately Owned Lands: Besides, development of common water bodies, the organization has initiated its action to conserve soil moisture on land owned by the farmers. This activity was undertaken by the organization on 5683 hectares of agriculture land in its project area. On these lands, bunds are formed according the slop and flow of rain water so that it can be stayed on the

field for longer period which will be useful for improving water table and maintaining moisture in the soil for longer period. This is one of the most important activities for enhancing land productivity in rain-fed area. In climate change scenario, such activities are crucial for escaping from its ill effects. It has been noted from the fact the farming community has been benefited considerably. They grow the crops in both seasons and applied limited irrigations to the crops grown on the treated plots as compared to other non-treated plots.

Activity	Cumulative Total
Chauka Building (Hectares)	1634
Field Bunds (Bigha)	17130
Nada, Nadi (Number)	359
Kheli /Animal drinking water structure(No.)	10
Talab/ponds (No.)	78
Khulla Chidya Ghar (Eco Park) (Hectares)	30
Jungle Hall (No.)	2
Organic Fertilization (Hectares)	325
Plaughing (Hectares)	350
Grass Seeding (Hectares)	1600
Vermin Composting (Kg.)	21,200
Garbage Pits (No.)	2
Wastewater Soak Pits(No.)	15