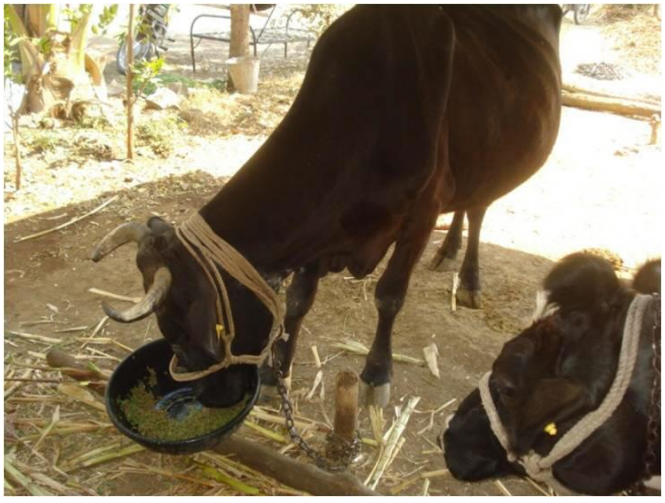
Success Stories of NICRA



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Water storage tanks renovation & micro irrigation increase water availability and use efficiency

Krishi Vigyan Kendra, Babhaleshwar is implementing NICRA project in Nirmal Pimpri village in Rahata block of the Ahmednagar district. Village selected is comes under scarcity zone with 90 percent rainfed area. Major source of irrigation is open wells and bore wells. Ave. rainfall is very less i.e.400-450 mm and scattered (rainfall received in the year 2011 is only 272 mm). During rainy season, there is a runoff of rain water due to silt deposition in storage tanks/ structures. Similarly farmers are using available water to the crop by flow irrigation method. This cause in declining water level after month of Dec-Jan., during summer there is scarcity of water for agriculture. Therefore KVK has given major emphasis on natural resource management activity. KVK has decided to make intervention in increasing water storage and increase the water use efficiency of available water. During village meeting need of different interventions has been explained.

KVK has made intervention under natural resource management activities like renovation of water storage tanks/structure and installation of micro irrigation system for horticulture crops

During the year 2011-12 renovation of total 9 water storage tanks/structure has made by desilting of deposited soil and increase the water storage capacity. Similarly desilted fertile soil deposited in the farmers field having light soil or poor soil fertility.

Outcome of the intervention

- Renovation of nine water storage tanks/structures increased water storage capacity by 49083cu.mtapproximatelyfivehundred lakh lit. water), help in increasing the water table.
- Total 129 open wells and 183 bore wells of surrounding area have been benefited due to this intervention.
- Increase the water level and available water up to month of March. This helps the farmers to cultivate the rabi crops like onion, wheat, fodder under the seviour drought condition.

- Soil deposited in the farmers field helped in improving the soil fertility and productivity. It is observed that during kharif season 2011 yield level of these land is increased besides improving water holding capacity
- Installation of drip irrigation system saves 30-40 per cent irrigation water. Hence with the limited available water during summer, farmers could able to survive their pomegranate crop. This micro irrigation promoted the farmers toward cultivation of pomegranate with available water. This year area under pomegranate has increase by 35-40 ha.

Use of Water Absorbent Polymer in Onion

Use of Water Absorbent Polymer in Onion

Krishi Vigyan Kendra, Babhaleshwar is implementing NICRA project in Nirmal Pimpri village in Ahmednagar district of Maharashtra. The source of irrigation in this village is tubewell. Irrigation facility in the field crops is limited during only good rainfall year. Farmer generally prefer growing short duration onion crop during rabi with average rainfall. However during prolonged dry spells there is water stress to crop leads to poor onion bulb development and poor yield. The water absorbent polymer is a long chain cross linked sodium acrylic based absorbent gel crystalline powder that absorbs and retains water 300 to 400 times its weight. The material is suitable in light to medium soils where water retention is poor and organic matter is poor. Under such conditions the soil is mixed with water absorbent polymer @ 4kg per acre helps to retain water and simultaneously releases water at appropriate stage of development of osmotic pressure in capillaries, thereby maintaining field capacity and promoting optimum growth. The product is highly stable, non-reactive and does not leave any residue.

Demonstrations on use of water absorbent polymer in onion for water saving in inseptisols soils led to improved water retention and reduced frequency of irrigation. This method gave higher bulb yield (182.3q/ha) with more net return (Rs 100987.5/ ha), 7.6 irrigations under demonstration and with a B: C ratio (1.49).

The following outcomes were observed in onion plantation where water absorbent polymer was used:

- Seedling moratility after transplantation was reduced to only 2 to 5% under treatment as compared to 22 to 28% under conventional plots
- Water saving was up to 34%
- Better water management weed management, resulted to increased water use efficiency

- Increased bulb size
- Reduced water stress due to maintenance of field capacity
- Obtained 28.8% higher yield.

- Use of Water Absorbent Polymer in Pomegranate

Use of Water Absorbent Polymer in Pomegranate

Despite severe water shortage, the farmers in Pimpri Nirmal village have adopted the pomegranate cultivation technology with farm pond and tanker irrigation. Various problems related to the irrigation, nutrient management, pest & diseases management has been addressed through NICRA project interventions for this purpose on community basis by forming pomegranate growers group. In this village the area under pomegranate has increased from 85 ha to 130 ha and no. of farmers have also increased from 178 to 265. During last two year 30 farm ponds has been constructed. This has helped develop very good cluster of pomegranate which is becoming major livelihood and income generating enterprise after livestock production in the drought prone Pimpri Nirmal Village. A demonstration on use of water absorbent polymer in Pomegranate to demonstrate the efficacy of different moisture conservation techniques was conducted. The water absorbant polymer was applied to pomegranate crop during late ambe bahar in March-April. The application has been observed to very significant in reducing the prolonged water stress in pomegranate crop due to increase in available water in the field capacity. Also there was an increased flower and fruit drop in untreated control plots due to increased formation of abscission layer due to water stress.

The irrigation through drip was extended from the normal 2 days to 3 to 4 days during the active fruit development phase. There was a saving of 14 lakh liters of water per hectare reducing the water demand to an extent of 35 per cent over untreated control. Similarly the fruit size and fruit retention was higher in absorbent polymer applied trees as compared to untreated trees. The fruit yield in treatment plot was observed to be 19.5 kg as compared to 16 kg per tree in control plots. The yield in demonstration plots was observed to be 157 q/ha as compared to 135.6 q/ha in control plots. There was an average increase of 13.7 per cent in marketable yield under demonstration. The efficiency of nutrients that were applied after the soil and leaf test was also observed to higher as the treated plots showed no symptoms of leaf yellowing or nutrient deficiencies

Foliar Feeding of Nutrients during Water Stress

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Krishi Vigyan Kendra, Babhaleshwar, Ahmednagar is implementing NICRA project in Nirmal Pimpri village which is rain fed village. The average rainfall of the village is 450 mm.Soybean, Bajra are the major kharif crops. In rabi, farmers are cultivating bengal gram as major crop besides wheat, sorghum and onion. During this year, this village received hardly 278 mm rainfall (49 per cent) as against 562 mm average rainfall of the district. Monsoon received late and crop sown in the second week of July. After sowing, dry spell of 27 days occurred (at initial vegetative growth stage, flowering stage). Similarly in bajra also dry spell observed during vegetation and reproduction stage. Due to dry spell at important period, there is drastic decline in the yield. During this drought period KVK has given foliar feeding of nutrients particularly 19:19:19. Similarly promoted the cycle hoeing in bajra and soybean instead of use herbicides or weeding. Due to hoeing soil mulching helped the crop to sustain in les water. This has helped to increase the yield of both crops. In soybean introduced short duration variety JS-9305, which matured 8-9 days before the regular variety JS-335. This intervention help to minimized the intensity of terminal drought. In soybean short duration variety JS-9305 gave 24.9 per cent (16.75 q/ha) higher yield than JS-335 which is ruling variety in the village. In bajra 18.39 q/ha yield received in demonstrated plot (18.6 per cent higher) which was only 15.5 q/ha in control plot. By seeing the good results of foliar feeding of nutrients, farmers have started applying these nutrients to various crops like fodder crops, wheat, onion etc.

During rabi season to protect the bengalgram crop from the water stress, foliar feeding of potassium nitrate at flowering is being done on the demonstration plots. Similarly, other farmers also advised to give the spray of potassium nitrate. Due to this foliar application of nutrients, with minimum expenditure farmers are getting good returns. During discussion with the farmers, it is observed that foliar feeding of nutrients will be adopted on large scale in future.

Moth bean as mixed crop in pearl millet

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Nirmal Pimpri, village selected for NICRA project is in rainfed receiving average rainfall is 450 mm. This year total rainfall received in the village is 350.8 mm which is very scattered and insufficient. Onset of monsoon was one month delay, sowing completed in first fortnight of July. Pearl millet is mainly cultivated in light to medium soil and periodic drought during growth period always affects initial vegetative growth and tillering. Hence intervention is made by introducing mixed cropping with moth bean which act as mulching crop. This system help to conserve the moisture and minimize evaporation losses during initial crop

growth stage beside minimized the weed intensity. This year after sowing of crop, there was two subsequent dry spell of 26 days. Sole pearl millet crop showed stunted growth; even some farmers' crops were dried. Under such situation this intervention helps to minimize the evaporation and conserve the moisture. Crop growth in the intervention is comparatively good. This help to increase the crop yield by 9.77 per cent. (yield of intervention is 17.18qt/ha, local check is 15.62 qt/ha) besides this additional yield of mothbean which was 1.5qt/ha and income of Rs. 7500/ha.

The B:C ration of intervention is 1.70 and local check is 1.18. This year rainfall started one month late hence many farmers have not adopted this mixed cropping interventions because month bean require 125-135 days for maturity. Late sowing affect the next season i.e. rabi season crops.

Up gradation of local goat by Osmanabadi buck

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Animal husbandry is the major enterprise in the village. There are more than 1200 local goats with the farmers. Goat enterprise in mainly look after by women. Hence each family has goats. Kid mortality, less twinning percentage and less weight gain are the major problems observed in the village due to extreme climatic change mainly during summer. Kid mortality increased during summer due to heat stress. Hence KVK introduced Osmanabadi goat for up gradation of the local goats which is sturdy and having more twinning percentage. Under this project total 20 Osmanabadi bucks have been supplied to 20 families for up gradation of local goat. These Osmanabadi bucks are using for servicing the local goats. Buck owner are charging fifty rupees for servicing of each local goat. More than 400 goats have conceived by these Osmanabadi bucks. Last two year data shows that kid mortality minimized in upgradard goat from 10 per cent to 5.1 percent (declined by 49 per cent).Average weight of upgraded goat increased by 0.72 kg within three month after birth (Kid weight at 3 month age of upgraded goat 8.02 kg, local goat 7.3 kg). Similarly twining per cent also increased by 0.22 percent (Twining percentage of kids of upgraded goat is 1.42 and local goat is 1.2).

Silage making – An alternative to green fodder during drought

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Dairy is the major enterprise of the village Nirmal Pimpri and it supported farmers economic. Dairy management major constraint is availability of green fodder during summer. Due to water scarcity after Feb- March green fodder is not available in the village. After month of March farmers have been purchased green fodders like maize, lucern from neighboring villages. It is expensive but farmers have no alternative. KVK has made intervention under NICRA activity by introducing the low cost silage making technology in the village during Feb- March.

Total ten units has established in the village under the project. Besides technology, KVK also supplied plastic paper to the farmers for silage preparation. Size of unit is 10x5x5 ft. of having capacity 2 tones. Sugarcane tops & maize fodder were used for silage making. Silage pits filled in month of Feb- March. After 45-60 days silage pit opened and used to dairy animal @10kg/day by mixing with dry fodder. One unit of silage supplied green and nutritious fodder to one animal for 5 -6 months.

Azolla- Cost saving alternative to the dairy enterprise

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The economy of the NICRA adopted village, Nirmal pimpri is mainly depend on dairy enterprise. In the dairy enterprise major cost is incurred on feed and fodder. Farmers daily gives average 2kg concentrate feed /cow. Monthly expenditure on concentrate feed is Rs 1000 /cow. To minimized expenditure on feed KVK introduced azolla feeding technology in the village. Azolla is a blue green algae having good quantity of protein, minerals and vitamins. It can be used as low cost feed to the dairy animal.

KVK established twenty azolla production units in the village with technical support. After the sufficient growth of azolla in bed, feeding started to the cows. Azolla feed o.5 kg/cow /day by mixing with concentrate feed. While feeding azolla quantity of concentrate feed minimized by 0.5 kg/cow/day. Cost of azolla production is very less. It saves average cost on feed by Rs 13.55/cow/day i.e. Rs 400-450/cow/month Technology of azolla production is easy hence farmers could be easily cultivated with minimum care.

KVK also organized field day to show the silage and azolla technology to minimized cost on feed and green fodder availability during scarcity period. This field day encourage the farmers for adoption of the technologies and fready to armers start azolla cultivation and silage making by their own cost.

The aim of the institute is upliftment of rural population and their integral rural development.

Introduction of Perennial Fodder crops

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Krishi Vigyan Kendra, Babhaleshwar, Ahmednagar is implementing NICRA project in Nirmal Pimpri village which is rain fed village. Animal Husbandry is an important agro based enterprise for livelihood security of the farmers. Due to water scarcity during the late rabi season and summer season, farmers are growing only regular sorghum crop for fodder purpose. In this village more than 267 ha area during the kharif and rabi is made available for fodder crops. The yield of rabi fodder depends on the rainfall and water availability. Many times the growth of rabi sorghum is only 3 to 4 ft. height, immature crop drying due to water shortage. Similarly during summer they are purchasing fodder from neighboring villages. Therefore, KVK introduced multicut fodder sorghum, perennial fodder Jayawant and rain fed fodder stylo. These demonstrations were conducted on 90 farmers field with 31.0 ha area. KVK also organized field day to show the performance of the multicut fodder sorghum to the farmers. Farmers have appreciated and accepted multicut

fodder sorghum as they can harvest the fodder up to availability of water with them. After drying of this crop also they can use it as dried fodder. Perennial fodder Jaywant could be sustained under drought condition during summer and give green fodder. Similarly its palatability is also good.

Introduction of improved poultry birds for backyard poultry

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Rearing of local poultry in backyard by the farmwomen is one of the major income source for them. Farmwomen have been rearing local poultry birds with lower body weight, which attained 1.2 to 1.4 kg live weight within six month and lay only 60-65 eggs per annum. There are 20-25 days pause of egg laying in four clutches in the year. The average mortality is 15-20 percent. The potential for higher income generation from backyard enterprise is well however due to conventional system they are getting very minimum return. Therefore KVK made effort to introduce the improved poultry strain Vanraja and Grampriya to enhance the productivity in backyard poultry. KVK supplied 500 birds of vanraja and grampriya each to the six families as parent flocks. Similarly incubator of 1000 eggs capacity is also making available to the farmers for egg hatching. During six month Vanraja bird gained 2.6 kg weight whereas Grampriya bird gained average 2.4 kg weight. The eggs production of both breeds for six month was 72 to 75 eggs. Total 850 chicks of vanraja and grampriya have been sold to the farmers through the hatching unit. Similarly eggs of these breed were also sold in the village for natural hatching @ Rs. 6 per egg. Aim of intervention is to introduce these improved birds through parent flock and hatching unit in village.