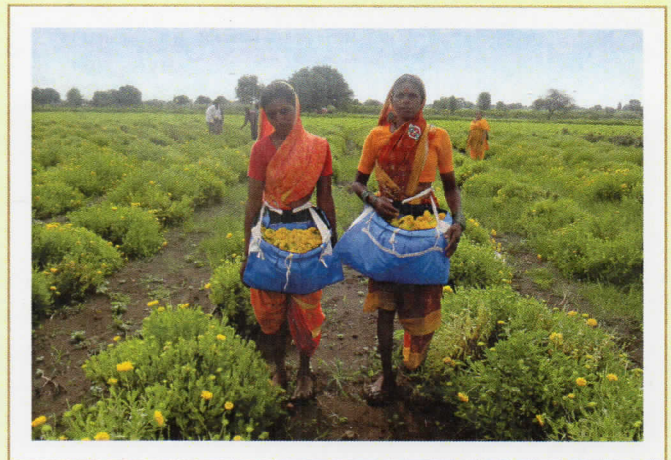


## Customized bags for flower harvesting

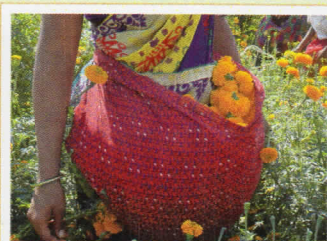
Drudgery Load of conventional methods of harvesting flowers from the fields such as loose & cut roses, gaillardia & marigold was calculated. The results revealed that all the selected flower harvesting activities were drudgery prone and no improved technology and methods were used for plucking & collection of selected flowers from the fields. There was intensive involvement of rural women in this activity and further they perform this activity putting large demands on their time & energy. The aspects considered for selecting material and designing bags for harvesting each flowers such as cut roses, loose roses, gaillardia & marigold were different such as water resistant material, durable to bear cuts due to thorns, size of the bag which will hold 5 kg of flowers, light in weight, both hands should be used for work, anthropometry of the worker and prevention from damage to the flower petals.





Prevalence of health problems reported by farm workers were maximum while performing harvesting of gaillardia due to lower height of the plants i.e. below the waist line of the worker, followed by allergy / skin infection & seasonal workload. Classification of drudgery load indicated that drudgery level of farm worker involved in marigold, gaillardia & loose rose harvesting was heavy. Whereas harvesting of cut rose belonged to classification of moderately heavy task.

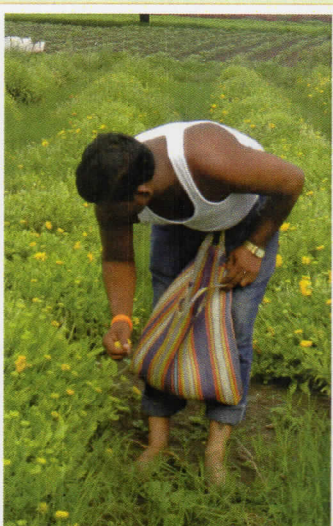
### Use of traditional bag/saree pallu for flower harvesting



### Drudgery load in flower harvesting

Loose rose, gaillardia & marigold harvesting was found to be heavy drudgery prone activity. Loose rose plucking was heavy activity due to maximum repetitive strain & musculoskeletal pain of wounds & cuts due to thorns. Whereas gaillardia harvesting was heavy activity due to postural & repetitive strain load as reported by workers. Drudgery level of marigold harvesting was highest (51 drudgery index) due to physiological load as they worked 6 hrs continuously in the field and carried 5-6 kg weight at a time for every 30 min. Cut roses harvesting was moderately heavy activity because this was performed with the help of secateurs. Large spacing in plants made easy to move between the rows and drudgery load of cut rose harvesting was found reduced.

### Conventional methods of flower harvesting





## Customized flower harvesting bags

### Gaillardia

- Tarpaulin waist bag with zip,
- Tarpaulin waist bag with flap(Tikai)



### Loose Roses

- Plastic bin back sac (Phuleri)



### Cut Roses

- Plastic bin back sac (Phuleri)
- Cotton tarpaulin hollow leg shoulder sac (Gauri)

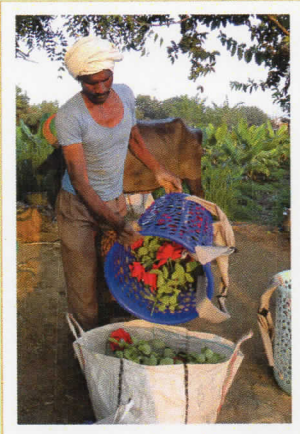


### Marigold

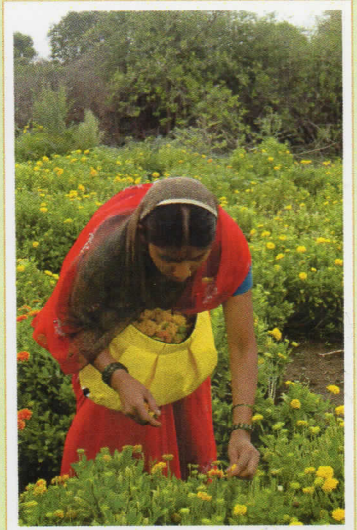
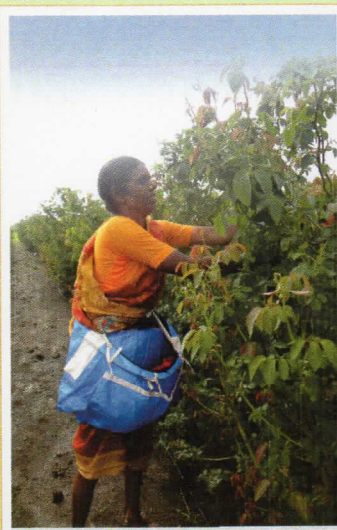
- Tarpaulin waist long bag with bottom cord (Sonai)



## Easy for Unloading



## Improved methods of flower harvesting





Percentage change in pace of work (kg/h/worker) in improved method was highest (33.3 %) in case of harvesting cut roses, followed by 16.66 percent in case of loose roses & 14.28 percent in case of harvesting gaillardia . Time load in flower harvesting was decreased due to use of developed customized harvesting bags for all the selected flowers such as cut roses (25 %), loose roses (9 to 14 %), gaillardia (12 to 16 %) & marigold (22 to 24 %). Rated perceived exertion (RPE) was decreased highly significantly by 25 to 33 percent in improved method while performing flower harvesting in case of all the three selected flowers. Hence, it can be said that developed customized harvesting bags for gaillardia , marigold, cut & loose roses are suitable technologies for mitigating drudgery & man days required for flower harvesting.

### Tikai

HDPE tarpaulin waist bag with flap



- Water Proof
- Tied at waist with cotton belt
- Harvesting with both hands is possible
- Can be used for harvesting vegetables such as okra, cluster beans & some light weight fruits
- Unlading bag is easy due to flap / zip
  - Capacity - 4kg flowers

### Gauri

Cotton tarpaulin hollow leg shoulder bag



- Capacity 5kg of cut roses
- Remains opened
- Water proof
- Shoulder mounted
- Both the hands can be free for flower harvesting
- Easy to unload
- Durable & with stand scratching due to thorns of the rose plant

### Sonai

HDPE tarpaulin waist hollow leg bag with bottom cord



- Water Proof
- Easy to unload by opening cord provided at bottom
- Waist tied bag due to which harvesting can be done by both hands
- Capacity-4 kg of marigold flowers
- Remained opened due to pliable wire

### Phuleri

Shoulder mounted plastic back bin



- Capacity 5kg of cut flowers
- Shoulder mounted
- Both the hands can be free for flower harvesting
- Easy to unload
- Durable & with stand scratching due to thorns of the rose plant