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Original Research Article

Impact study of Front Line Demonstration on Productivity of Muskmelon (*Cucumus Mela* L.) in Northern Dry Zone of Karnataka, India

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A B S T R A C T

Muskmelon (*Cucumus mela* L.) is one of the important cucurbit crops grown during summer season. In Raichur district, muskmelon is growing over an area of 170 ha with a production of 2610 tonnes. Since most of farmers are growing this crop during summer season but due to market glut, farmers unable to get good market price. Farmers need to change growing season so that they can get better income. But modification of weather is a challenging to the farming community in hot climate area of Raichur district. During 2016-17, in Raichur district, so many farmers have adopted shadenet under Krishibhagya programme implemented by the department of horticulture and cultivating capsicum, from which they did not get better income due to low market price. Agriculture Extension Education Centre, Lingsugur under UAS, Raichur introduced muskmelon during rainy season of 2016. Centre has conducted training and exposure visit to model muskmelon plot. By looking into the profit earned by the cultivation of muskmelon, 15 farmers have adopted in one acre each. AEEC, Lingsugur scientists frequently visited demonstration plots and guided the scientific way of cultivation of muskmelon. Selection of best variety, seed treatment with bio-inputs, balanced nutrient application, drip irrigation and fertigation, IPM practice were the major technical interventions. Within 60 days, farmers would abele to harvest the crop. They have harvested on an average of 17.2 tonnes of muskmelon fruits from one ha area and realized net returns of Rs 147,400 per ha.

Keywords

Muskmelon, demonstration, capsicum, protective cultivation, fertigation

Introduction

Looking to the increasing population, climate change, decreasing land holdings, increasing pressure on natural resources i.e. land & water and high demand of quality horticultural fresh produce we are forced to shift towards modern technologies of crop production like protected cultivation. Protected cultivation at least is needed to convert some portion of present 9.2 million ha area under vegetable or fruit cultivation for increasing the national productivity and quality of the produce. Presently area under protected cultivation of horticultural crops is only around 40,000 ha and out of which large portion mostly in northern parts of India is not successfully being utilized for protected cultivation. Although promotion of protected cultivation will certainly help in creation of huge self-employments for unemployed educated youths and will also raise the national economy by sale of high quality produce in domestic and international markets. Under the new era of WTO (World Trade Organization), these kinds of models posses' high potential for enhancing the income of farmers opting for quality and offseason vegetable, fruits and cut flower cultivation under protected conditions. Production of crops under protected conditions not only provides high water and nutrient use efficiency but it can easily increase the productivity by 1-2 folds over open field cultivation of these crops under varied agro climatic conditions of the country. This technology has very good potential especially in urban and peri-urban areas adjoining to the major cities which is a fast growing market for fresh produce of the country. But protected cultivation technology requires very careful planning, maintenance and management about timing of production and moreover, harvest time to coincide with the shortage period of availability of produce and high market prices, choice of varieties adopted to off season environments, and able to produce higher and economical yields of high quality produce etc.

Vegetable, fruits and cut flower farming in agri-entrepreneurial models targeting various niche markets of the big cities of the country is regularly inviting attention of the vegetable and flower growers for diversification from traditional ways of crop cultivation to such modern methods. Even the unemployed educated youths who are not attracted or interested in traditional agriculture are also showing good interest and can be further motivated for this kind of modern agricultural technologies (Patel, 2012). With keeping points in view frontline demonstration (FLD) on muskmelon cultivation under shadenet was conducted during 2016 in farmer's field at Agriculture Extension Education Centre (AEEC), Lingsugur, Karnataka state.

Materials and Methods

The frontline demonstration was conducted in 15 farmer's field at Agriculture Extension Education Centre (AEEC), Lingsugur, Karnataka state with an objective of introducing muskmelon cultivation under protective cultivation. Lingsugur is situated in Northern Dry Zone (Zone-2) of Karnataka at 16^{o} N latitude and 76^{o} E longitude with an altitude of 499 meters above the mean sea level. Under FLD, University recommended technologies were demonstrated in farmer's field over an area one acre each with control. Improve variety, seed treatment with bio-inputs, balanced nutrient application, drip irrigation and fertigation, IPM practice were the major technical interventions. Yield data were recorded.

Technology gap, extension gap and technology index were calculated as suggested by Samui *et al.*, *(*2000).

Technology gap: Potential yield – Demonstration yield

Extension gap: Demonstration yield – Farmers yield

$$\text{Technology index \%} = \frac{\text{Technological gap}}{\text{Potential yield}} \times 100$$

Results and Discussion

Yield potential of muskmelon

During the study, the average yield of muskmelon in demonstration plot under protective cultivation (17.2 t ha^{-1}) was higher than the farmer's practice (14.8 t ha^{-1}), where muskmelon was grown under open cultivation. The average percentage increased in the fruit yield over farmers practice is 16.22 per cent. The results indicated that, the farming community of investigation were motivated by the new agricultural technologies applied in the demonstration plots.

Table.1 Yield gap analysis of cultivation of muskmelon (Average of 15 farmers)

Particular	Area (ha)	No of farmers	Fruit yield (t ha^{-1})	Potential yield (t ha^{-1})	Percent increase over local check	Technological gap (t ha^{-1})	Extension gap (t ha^{-1})	Technology index
FLD	6	15	17.2	20	16.22	2.8	2.4	14
FP	6	15	14.8	-				

Table.2 Economic analysis of cultivation of muskmelon (Average of 15 farmers)

Particular	Fruit yield (t ha^{-1})	Cost of cultivation (Rs ha^{-1})	Gross returns (Rs ha^{-1})	Net returns (Rs ha^{-1})	B:C ratio
FLD	17.2	145000	292400	147400	2.02
FP	14.8	142000	251600	109600	1.77

FLD: Frontline demonstration
FP: Farmer's practice

Similar reports was also recorded by Ban *et al.,* (2006), Cantliffe *et al.,* (2003), Cantliffe *et al.,* (2001), Jovicich *et al.,* (2004), Kultur *et al.,* (2001), Logendra *et al.,* (2001), Olson *et al.,* (2006), Rodriguez *et al.,* 2006, Shaw *et al.,* (2001) and Shaw *et al.,* (2004) in muskmelon crop.

Technology gap analysis

The Technology gap in the demonstration yield over potential yield was 2.8 t ha^{-1}. There is no much difference between these two parameters, which indicates that due to adoption of improved technologies boosted the fruit yield of muskmelon.

Extension gap analysis

The extension gap of 2.4 t ha^{-1} was observed. This emphasized the need to educate the farmers through various means for the adoption of improved agricultural production technologies to reverse this trend of wide extension gap. More and more use of latest production technologies with high yielding variety will subsequently change this alarming trend of galloping extension gap. The new technologies will eventually lead to the farmers to discontinue the old technology and adopt the new technology (Hiremath and Nagaraju, 2010).

Technological Index

The technology index shows the feasibility of the evolved technology at the farmer's field and the lower the value of technology index more is the feasibility of technology. The calculated technology index is 14.00 percent. This FLD is more feasible than the farmer's practices where muskmelon was grown under open conditions.

Economic analysis

In demonstration plot higher gross return (Rs 2,92,400 ha^{-1}), net return (Rs 1,47,400 ha^{-1}) and B:C (2.02**)** ratio was observed compared to farmer practice. This is attributed to higher fruit yield obtained in the demonstration field as compared to farmer's practice.

The front line demonstration results influentially brought out that, the yield of muskmelon under protective cultivation could be increased with intervention on varietal improvement, seed treatment, INM and IPM practices. The wide technology gap, which need to be bridged by scientific production and protection technologies in varied agro-climatic conditions. Major attention is to be made on development of area specific technology module for enhancing the productivity of muskmelon in varied agro-ecosystem. Capacity building of farmers as well as extension functionaries is must receive expected outcomes from technological intervention.

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