

Jeevamrutha, a New Organic Approach for Disease Management and Crop Production in Pomegranate and Groundnut

S. N. UPPERI, B. K. LOKESH, G. N. MARADDI AND M. B. AGNAL

*Extension Education Unit, College of Agriculture, UAS, Dharwad
 Bhemarayanagudi 585287, India
 E-mail: snupperi@rediffmail.com*

Abstract

The studies on the use of jeevamrutha with the recommended dose of fertilizer for the production and management of leaf spot diseases in pomegranate and groundnut were conducted in farmer's field at two locations in Karnataka during *kharif* of 2006. The use of jeevamrutha improved the size and color of the fruits which fetched more prices at Rs 60/kg compared to the control which had small sized and inferior fruit qualities in local market. Further the highest mean yield of 14.10 q/ha was recorded in jeevamrutha treated field compared to control that had low yield (10.70 q/ha). The effect of jeevamrutha on leaf spot and yield of groundnut registered low leaf spot incidence (2.5%) compared to the control (8.5%). Further, the increased yield of groundnut (2,050 kg/ha) was recorded with the treated plot, compared to control (986 kg/ha). It is attributed to the phenolic compounds and other elements present in the cow urine and dung led to the inhibition and multiplication of the pathogen and further restricts the spread of pathogen. This imparts the disease resistant once and reduced incidence.

Key words : Jeevamrutha, Pomegranate, Groundnut, Disease management, Crop production.

The intensive cultivation of land without replenishment depletes the soil fertility and reduces the yield potentiality in the long run. For sustained yields application of organics plays an important role which develops resistance to pest and diseases. The use of jeevamrutha and cow urine have been advocated by Palekar (1) and many workers where they have demonstrated the use at several locations of different crops. The natural farming practices like use of jeevamrutha, mulching either with live (cowpea) or non-mulching (straw) enhances the activities of soil microbes, earthworms and fixation of N required for the main crop. Pomegranate is commercially grown in many parts of the country and it suffers from various fungal and bacterial diseases among them, bacterial leaf spot is more severe in northern Karnataka, it is caused by bacterium (*Xanthomonas punicae*) incidence resulting irregular water soaked spots on leaves and they are light brown to dark brown in appearance and the severity of the disease may lead to greater yield reduction (2). Groundnut is an important oil-seed crop of India grown in all type of climatic condition during summer and *kharif* season but predominantly grown under rainfed and irrigated condition. Late leaf spot (*Cercosporidium personata*) is an eco-

nomically important disease of cultivated peanut throughout the India. In most areas disease occurs but the incidence and severity of the disease vary with environment, location, and cultivar. Although effective chemical control methods are available, their applications are limited because of high costs and possible existence of fungicide-tolerant strains of the pathogens. Hence new organic integrated approach of using jeevamrutha is the best way to control the diseases and increase the grain yield. This disease spreads rapidly at a temperature above 22 C and when the relative humidity is higher. Small dark brown circular spots appear on the leaves. When the attack is severe, defoliation occurs and only the stem remains. The yield of susceptible varieties is substantially reduced.

Methods

The studies on the usage of jeevamrutha, along with recommended fertilizer for the production of pomegranate and management of leaf spot diseases was conducted in farmers field at two location at Basapur and Mattur of Raichur district of Karnataka during *kharif* of 2006. The variety being used was

keshar and the disease severity previously was high. The jeevamrutha was applied six times at the interval of 15 days commencing from the on set of flowering to fruit development. The observation on leaf spot disease incidence using standard scale from flowering up to harvest and yield date was recorded and tabulated.

Similarly the field demonstration on groundnut diseases management and yield production was carried out by use of jeevamrutha at the same location (Raichur). The jeevamrutha was sprayed twice at 40 and 52 DAS. The observation on the disease incidence of leaf spot was recorded based on the scale given by Subramanian et al. (3). The yield data of groundnut were recorded and tabulated. The jeevamrutha used for the studies were prepared with the following composition and methods : 10 kg cow dung, 10 liter of cow urine, 2 kg of Jaggry, 2 kg of flour of Bengal gram and 250 g of rhizosphere soil in 200 liters of water.

This solution was stirred for 5 days, three times a day morning, afternoon and evening daily. The prepared jeevamrutha was applied to each tree at liter/tree at different intervals and for groundnut it was given through irrigation and sprayed twice at 40 and 52 DAS at 50 ml/liter of water.

Results and Discussion

The occurrence of mean disease incidence in pomegranate was 12.0% compared to the control (40%) by the use of jeevamrutha. It improved the size and color of the fruits which fetched more price at Rs 60/kg compared to the control which had small sized and inferior fruit qualities local market. Further the highest mean yield of 14.10 q/ha was recorded in jeevamrutha treated field compared to control that had low yield (10.70 q/ha) (Table 1).

The mean bacterial leaf blight incidence in pomegranate with jeevamrutha was 12% compared to the control (40%) and mean yield with jeevamrutha was 14,100 kg/ha compared to the mean yield of 10,700 kg/ha in control plot. The returns of about Rs 1,125,000/- was obtained with the treated compared to control which was about Rs. 267,500. This is attributed to the higher nutrient elements percent in the cow urine and dung which influences the reduction of disease incidence. Further, the increased microbial

Table 1. Effect of jeevamrutha in disease management and production of pomegranate. *Mean values, *0–9 scale.

Treatment	Disease scale (0–9) (mean % incidence)*	Mean yield (kg/ha)*	Returns (Rs)
1 Jeevamrutha + RDF	12.0	14,100 10,100 (Rs 60/kg) 4000 (Rs 25/kg)	60,6000 1,00000 706,000
2 Control (No spray)	40.0	10700 (Rs 25/kg)	2,67,500

population mobilized the use available nutrients to be taken up by the plants. This is in confirmation with Palekar et al. (1) and Rajrathan (4) who reported that the phenolic compounds and other elements present in the cow urine and dung led to the pathogen inhibition and its multiplication thus restricts the further spread of the pathogen.

The use of jeevamrutha on groundnut leaf spot disease and yield revealed that the treated plot registered low percent leaf spot incidence (2.5%) compared to the control (8.5%) (Table 2). Further, the increased yield of groundnut (14.10 q/ha) compared to the control that recorded low yield (9.86 q/ha). The returns were Rs 51, 250/- compared to control (Rs 24,650). This may be attributed to the micronutrients like copper, gold salt and zinc and phenolic compounds present in the jeevamrutha improved the plant growth and in turn triggers systemic resistance of host system against pathogen thereby suppression of growth and multiplication of pathogen. The results were in accordance with Kuracheva and Jayarajan (5), who observed that animal dung was found to inhibit tomato spotted wilt virus. Further, Palekar (1) reported the use of jeevamrutha in agriculture and horticulture crops to impart the resistance for the control of diseases and for sustaining the production. But the

Table 2. Efficacy of jeevamrutha on leaf spot disease and yield of groundnut. *Mean values, *0–9 scale.

Treatment	Disease scale (0–9 Score) (% incidence)*	Yield (kgs/ha)*	Returns (Rs)
1 Jeevamrutha	2.50	2050	51,250
2 Control (No spray)	8.50	986	24,650

exact mechanism of mode of action of jeevamrutha is yet to be ascertained.

References

1. S. Palekar. 2006. Natural farming practices. Res. Bull., Amaravathi, Maharastra, India.
2. Anonymous. 2003. Oilseeds (sunflower) for the year 2001-02. Ann. Prog. Rep. of ACIRP. Direct. Oils. Res. ICAR, Hyderabad, India.
3. Subramanian P., R. W. Gibbons, S. N. Nigam and V. R. Rao. 1980. Screening methods and further sources of resistance to peanut leaf spot and rust of peanut. Science 7 : 10—12.
4. Rajrathan 1971. Boron, possible role in plant metabolism science. Washington 172 : 1142—1143.
5. Kurucheva K. and R. Jayarajan. 1994. Antiviral principles in animal dung and cow urine. Indian Phytopath. Supl. 45 : 97.