

A comparative study on extent of adoption of improved dairy management practices by trained and untrained dairy farm women members of self help groups

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Abstract: Dairy farming is one of the important activities undertaken by Self-Help Groups (SHGs) to enhance their socio-economic conditions. The present study attempts to compare the extent of adoption of improved dairy management practices by trained and untrained dairy farm women members of SHGs in Gadag district of Karnataka during 2014-15. Multistage random sampling procedure was followed for selection of 60 trained and 60 untrained dairy farm women members of SHGs. Thus, the total sample size was 120. The data was collected from the selected sample through personal interview with the help of pretested structured interview schedule. The results with respect to overall extent of adoption showed that, majority of the trained (70.00%) and a negligible percentage of the untrained (1.67%) dairy farm women members of SHGs belonged to high adoption category of dairy management practices. Further, in relation to practice wise extent of adoption of dairy management practices it was reported that majority of trained and untrained dairy farm women members of SHGs were fully adopted the practices like, keeping watch on estrous cycle and heat symptoms of cow/buffaloes (96.67 and 50.00%), practicing AI/Natural service within 12-14 hours after onset of estrous (98.33 and 66.67%), growing forage crops all along the border of field (80.00 and 65.00%), daily requirement of dry fodder (8-10 kg) (83.33 and 58.33%), offering medicines to the sick animals from veterinary doctor (95.00 and 75.00%), practicing the dry period in cow/buffaloes before 3 months of parturition (93.33 and 78.33%) etc. Z- test analysis revealed that there exists a significant difference between trained and untrained dairy farm women members of SHGs with respect to extent of adoption of dairy management practices.

Key words: Adoption, Dairy farming, Management practices, Self-help groups

Introduction

India is predominantly an agrarian society where animal husbandry forms the backbone of national economy. Dairy enterprise, next to agriculture, not only provides continuous income and improves the dietary standards of family, but also supplements the income and reduces unemployment to an extent. Various studies suggest that dairying has enormous potential to improve the socio-economic status of the large percentage of rural population. But the level and speed of adoption of dairy innovation by farming community has been far from satisfactory though it has direct bearing on dairy farm production. The slow pace of adoption of improved dairy practices is attributed to various factors. Although serious efforts to transfer the scientific dairy husbandry practices to the farmers have been made yet various studies indicate that farmers have adopted only 30.00 percent of the scientific dairy practices by resourceful farmers (Meena *et al.*, 2012). Hence, it is important to transfer the scientific dairy practices to the resource poor farmers that include landless laborers who rear animals for milk production. Hence, it is emphasized that imparting suitable training in improved dairy farming practices can enhance the rate of adoption of scientific dairy practices in these resource poor families. A first-hand knowledge of these factors to the extension personnel would create the speedy adoption of dairy innovations in the villages. Thus, adoption of scientific dairy husbandry practices is one of the important aspects, which influence livestock production. Hence, tremendous research work has been done at different part of the country on the various aspects of scientific/improved dairy husbandry practices. Also, it is very important to survey the livestock population in rural areas in respect of scientific dairy

practices, which differ from region to region and district to district. Therefore, keeping this in view, present study was carried out with the specific objective to compare the extent of adoption of improved dairy management practices by trained and untrained dairy farm women members of SHGs.

Material and methods

The study was an “*Ex-post facto*” research conducted during the year 2014-15 in the operational area of K. H. Patil Krishi Vigyan Kendra (KVK); Hulkoti, Gadag district (Northern Karnataka) which is managed by NGO (Agricultural Science Foundation, 1985). Gadag district was purposively selected, because of the effective and efficient functioning of the K. H. Patil KVK as it organized skill up-gradation training to the farm women members of SHGs on dairy management practices under the sponsorship of SGSY (Swarana Jayanti Gram Swa Rojagar Yojana) programme. Out of five talukas of Gadag district three talukas *viz.*, Gadag, Ron and Shirahatti were selected purposively based on highest number of trained dairy farm women members of SHGs. Similarly, four villages from each selected talukas were again purposively selected based on highest number of trained dairy farm women. Further, from each selected village five trained and five untrained dairy farm women members of SHGs were selected by simple random technique. Hence, the study covered 12 villages from 3 talukas of Gadag district to form a sample of 120 respondents. Further, a pre-tested structured interview schedule was used to collect the data from the respondents by personal interview method. Statistical packages like excel and SPSS version 16.00 were used for analysis.

Results and discussion

A critical look at the data in Table 1 revealed that, majority of the trained (70.00%) and a negligible percentage of the untrained (1.67%) dairy farm women members of SHGs belonged to high adoption category of dairy management practices, followed by 25.00 per cent of trained and 28.33 per cent of untrained dairy farm women were found in medium adoption category. Whereas, a meager percentage of trained (5.00%) and majority of untrained (70.00%) dairy farm women were found in low adoption category. A clear difference in adoption was found between the trained and untrained dairy farm women. The probable reason behind these differences in adoption result might be due to the fact that, trained dairy farm women got good practical exposure during training resulting in updating their knowledge and putting the same in actual use. The above results are partially in accordance with the findings of Chaudhari (2006), Halakatti *et al.* (2007), Veeranna & Singh (2004) and Rahman & Gupta (2015) who reported that more than half of the dairy farmers were in medium level of adoption of improved dairy practices.

It could be observed from the Table 2 that, majority of the trained and untrained dairy farm women members of SHGs were fully adopted the practices like practicing AI/natural service within 12-14 hours after onset of estrous (98.33% and 66.67%), keeping watch on estrous cycle and heat symptoms of cow/buffaloes (96.67% and 50.00%) and practicing artificial insemination (83.33% and 48.33%), respectively. Further, it was noticed that majority of trained (60.00%) farm women were fully adopted the improved breeds of cows/buffaloes for milch purpose; while, it was not fully adopted by majority (65.00%) of untrained dairy farm women. The results also revealed that, in case of practicing pregnancy diagnosis, more than half of the trained (51.67%) and majority of the untrained (66.67%) dairy farm women were found in full and partial adoption category. The findings of Chaudhari (2006) and Halakatti *et al.* (2007) lend support to the findings of the present study.

The perusal of the results of the Table 2 revealed that, majority of the trained (80.00%) and untrained (65.00%) dairy farm women members of SHGs were fully adopted growing forage crops for animals; while, majority of trained (76.67%) and cent per cent of untrained dairy farm women were not adopted the growing forage grasses for animals feeding. Further, a close look about fodder utilization methods, it was found that cent per cent of the trained and untrained dairy farm women were

not adopted the fodder utilization methods such as soaking the chaffed dry fodder in water for 7-8 hours, silage making and hay making. Whereas, it could also be observed that, large majority of the trained and untrained dairy farm women were not adopted the practices such as urea treatment of dry fodder (96.67% and 98.33%) and jaggery treatment of dry fodder (65.00% and 85.00%), respectively. While, most of the trained (55.00%) and untrained (78.33%) farm women were partially adopted the chaffing the dry fodder at 2-3 cm in length, followed by more than half of the trained (53.33%) and untrained (66.67%) dairy farm women were partially and not adopted the salt water treatment of dry fodder, respectively.

With respect to providing daily requirement of the production ration (day/animal), it could be observed that large majority of the trained and more than half of the untrained dairy farm women were fully adopted providing daily requirement of concentrates (2-4 kg) depending up on the milk production (85.00% and 66.67%) and daily requirement of dry fodder up to 8-10 kg (83.33% and 58.33%), respectively. While, majority of the trained (66.67%) and untrained (83.33%) dairy farm women were partially adopted providing daily requirement of green fodder (30-35 kg). However, in relation to adoption of feeding colostrum to newly born calves it was inferred that, cent per cent of the trained and untrained dairy farm women were fully adopted the practice of feeding colostrum to newly born calves within half an hour. Whereas, large majority of the trained (88.33%) and more than half of the untrained (55.33%) farm women were fully and partially adopted the practice of feeding colostrum to newly born calves at the rate of ten per cent of body weight for minimum five days, respectively. Further, with regard to providing 3-4 times of clean drinking water to the animals daily, it could be observed that majority of the trained (75.00%) and untrained (71.67%) dairy farm women were found in full and partial adoption, respectively. The findings of Chaudhari (2006), Halakatti *et al.* (2007), Murai & Singh (2011), Kashappa (2013) and Pharate *et al.* (2013) lend support to the findings of the present study.

The results of the Table 2 indicates that, large majority of the trained (86.67%) and untrained (95.00%) dairy farm women were not adopted the improved system of housing *i.e.* head to head/tail to tail system. Whereas, in case of providing facilities of ideal byre it could be observed that, majority of the trained and untrained dairy farm women were fully adopted the ideal byre facilities *viz.*, lighting arrangement in shed (95.00% and 86.67%), separate place for calf (93.33% and 83.33%), manger (93.33% and 75.00%), good ventilation and natural light (88.33% and 80.00%), 1" slope in legs (80.00% and 60.00%), gutter for easy flow of urine (80.00% and 60.00%), 12-15 ft. height of shed roof (76.67% and 55.00%) and separate feed godown (75.00% and 63.33%), respectively. Further, in relation to adoption of removing dung and urine from the byre frequently and keeping it dry, majority of the trained (66.67%) and untrained (58.33%) dairy farm women were found in full and partial adoption, respectively. The results were in conformity with the findings of Murai & Singh (2011), Kashappa (2013) and Pharate *et al.* (2013).

Table 1. Distribution of trained and untrained dairy farm women members of SHGs according to overall extent of adoption of dairy management practices n=120

Categories	Trained (n ₁ =60)		Untrained (n ₂ =60)	
	Frequency	Percentage	Frequency	Percentage
Low (< 117.29)	3	5.00	42	70.00
Medium (117.29 to 125.19)	15	25.00	17	28.33
High (>125.19)	42	70.00	1	1.67
	Mean =121.24		SD= 9.31	

Table 2. Distribution of trained and untrained dairy farm women members of SHGs based on their practice wise extent of adoption of dairy management practices n=120

Dairy management practices	Extent of adoption					
	Trained n ₁ =60			Untrained n ₂ =60		
	Fully adopted	Partially adopted	Not adopted	Fully adopted	Partially adopted	Not adopted
I. Breeding management practices						
1. Improved breeds of cows/buffaloes for milch purpose	36(60.00)	0(0.00)	24(40.00)	21(35.00)	0(0.00)	39(65.00)
2. Keeping watch on estrous cycle and heat symptoms of cow/ buffaloes	58(96.67)	2(3.33)	0(0.00)	30(50.00)	30(50.00)	0(0.00)
3. Practicing artificial insemination (AI)	50(83.33)	9(15.00)	1(1.67)	29(48.33)	22(36.67)	9(15.00)
4. Practicing AI/natural service within 12-14 hours after onset of estrous	59(98.33)	0(0.00)	1(1.67)	40(66.67)	11(18.33)	9(15.00)
5. Practicing pregnancy diagnosis	31(51.67)	29(48.33)	0(0.00)	20(33.33)	40(66.67)	0(0.00)
II. Feeding management practices						
1. Growing green fodder for animals feeding :						
a. Forage Crops : Sorghum, Maize etc.	48(80.00)	7(11.67)	5(8.33)	39(65.00)	10(16.67)	11(18.33)
b. Forage Grasses :Hybrid Napier, Bajra, Guinea, Para etc.	10(16.67)	4(6.66)	46(76.67)	0(0.00)	0(0.00)	60(100.00)
2. Fodder utilization methods:						
a. Chaffing the dry fodder at 2-3 cm in length	27(45.00)	33(55.00)	0(0.00)	13(21.67)	47(78.33)	0(0.00)
b. Soaking the chaffed dry fodder in water for 7-8hours	0(0.00)	0(0.00)	60(100.00)	0(0.00)	0(0.00)	60(100.00)
c. Salt water treatment of dry fodder	8 (13.34)	32(53.33)	20(33.33)	2(3.33)	18(30.00)	40(66.67)
d. Jaggery treatment of dry fodder	0(0.00)	21(35.00)	39(65.00)	0(0.00)	9(15.00)	51(85.00)
e. Urea treatment of dry fodder	0(0.00)	5(8.33)	58(96.67)	0(0.00)	1(1.67)	59(98.33)
f. Silage making	0(0.00)	0(0.00)	60(100.00)	0(0.00)	0(0.00)	60(100.00)
g. Hay making	0(0.00)	0(0.00)	60(100.00)	0(0.00)	0(0.00)	60(100.00)
3. Providing daily requirement of production ration (day/animal) :						
a. Daily requirement of green fodder (30-35 kg)	20(33.33)	40(66.67)	0(0.00)	3(5.00)	50(83.33)	7(11.67)
b. Daily requirement of dry fodder (8-10 kg)	50(83.33)	10(16.67)	0(0.00)	35(58.33)	25(41.67)	0(0.00)
c. Daily requirement of concentrates depending up on the milk production (2-4 kg)	51(85.00)	8(13.33)	1(1.67)	40(66.67)	17 (28.33)	3(5.00)
4. Feeding colostrum :						
a. Feeding colostrum to newly born calves within half an hour	60 (100.00)	0(0.00)	0(0.00)	60(100.00)	0(0.00)	0(0.00)
b. Feeding colostrum to newly born calves at the rate of 10% of body weight for minimum 5 days	53(88.33)	7(11.67)	0(0.00)	28(46.67)	32(53.33)	0(0.00)
5. Providing 3-4 times clean drinking water to the animals daily	45(75.00)	15(25.00)	0(0.00)	17(28.33)	43(71.67)	0(0.00)
III. Animal shed management practices						
1. Head to head / tail to tail system of housing	8(13.33)	0(0.00)	52(86.67)	3(5.00)	0(0.00)	57(95.00)
2. Providing facilities of ideal byre :						
a. 12-15 ft. height	46(76.67)	14(23.33)	0(0.00)	33(55.00)	24(40.00)	3(5.00)
b. 1" slope in legs	48(80.00)	0(0.00)	12(20.00)	36(60.00)	0(0.00)	24(40.00)
c. Gutter for easy flow of urine	48(80.00)	0(0.00)	12(20.00)	36(60.00)	0(0.00)	24(40.00)
d. Manger	56(93.33)	0(0.00)	4(6.67)	45(75.00)	0(0.00)	15(25.00)
e. Separate place for calf	56(93.33)	0(0.00)	4(6.67)	50(83.33)	0(0.00)	10(16.67)
f. Electricity arrangement in shed	57(95.00)	0(0.00)	3(5.00)	52(86.67)	0(0.00)	8(13.33)
g. Good ventilation and natural light facility	53(88.33)	7(11.67)	0(0.00)	48(80.00)	12(20.00)	0(0.00)
h. Separate feed godown	45(75.00)	0(0.00)	15(25.00)	38(63.33)	0(0.00)	22(36.67)
3. Removing dung and urine from the byre frequently and keeping it dry	40 (66.67)	20(33.33)	0(0.00)	25(41.67)	35(58.33)	0(0.00)
IV. Health care management practices						
1. Daily washing of the animals (Grooming/Bathing of animals)	37(61.67)	23(38.33)	0(0.00)	25(41.67)	35(58.33)	0(0.00)
2. Removing mucus from nose and mouth of the calves just after birth	60(100.00)	0(0.00)	0(0.00)	60(100.00)	0(0.00)	0(0.00)
3. Providing treatment of the umbilical cord to newly born calf	60(100.00)	0(0.00)	0(0.00)	60(100.00)	0(0.00)	0(0.00)

Dairy management practices		Extent of adoption					
		Trained n _t =60			Untrained n _u =60		
		Fully adopted	Partially adopted	Not adopted	Fully adopted	Partially adopted	Not adopted
4.	Practicing deworming in calves for the prevention of parasitic diseases	50(83.33)	10(16.67)	0(0.00)	25(41.67)	35(58.33)	0(0.00)
5.	Vaccination of animals timely and regularly	51(85.00)	9(15.00)	0(0.00)	20(33.34)	38(63.33)	2(3.33)
6.	Segregating the diseased animals suffering from Contagious disease from healthy animals	43(71.67)	13(21.67)	4(6.66)	26(43.33)	22(36.67)	12(20.00)
7.	Offering medicines to the sick animals from veterinary doctor	57(95.00)	3(5.00)	0(0.00)	45(75.00)	15(25.00)	0(0.00)
8.	Controlling the insect problems in animal shed (lice, bug, mosquitoes and flies. etc.)	0(0.00)	54(90.00)	6(10.00)	0(0.00)	43(71.67)	17(28.33)
<u>V. Miscellaneous management practices</u>							
1.	Practicing methods of identifying animals	21(35.00)	23(38.33)	16(26.67)	6(10.00)	6(10.00)	48(80.00)
2.	Controlling the bad habits in animals :						
a.	Licking	43(71.67)	17(28.83)	0(0.00)	23(38.83)	37(61.67)	0(0.00)
b.	Kicking	54(90.00)	6(10.00)	0(0.00)	50(83.33)	10(16.67)	0(0.00)
c.	Fence breaking/jumping	59(98.33)	1(1.67)	0(0.00)	55(91.67)	5(8.33)	0(0.00)
d.	Eating rope, cloths and plastics etc.	59(98.33)	1(1.67)	0(0.00)	48(80.00)	12(20.00)	0(0.00)
3.	Practicing full hand method of milking	22(36.67)	30(50.00)	8(13.33)	6(10.00)	26(43.33)	28(46.67)
4.	Practicing the dry period in cow/buffaloes before 3 months of parturition	56(93.33)	4(6.67)	0(0.00)	47(78.33)	10(16.67)	3(5.00)
5.	Using the clean/ washed utensils for milking and does not using these utensils for other purposes	58(96.67)	2(3.33)	0(0.00)	20(33.34)	8(13.33)	32(53.33)
6.	Filtering of milk with a sieve or muslin cloth after milking	38(63.33)	22(36.67)	0(0.00)	13(21.67)	27(45.00)	20(33.33)
7.	Record maintaining :						
a.	Breeding record	57(95.00)	3(5.00)	0(0.00)	36(60.00)	7(11.67)	17(28.33)
b.	Animal feed/fodder record	35(58.33)	15(25.00)	10(16.67)	20(33.34)	8(13.33)	32(53.33)
c.	Milk sale record	46(76.67)	2(3.33)	12(20.00)	36(60.00)	7(11.67)	17(28.33)
d.	Animal health record	32(53.33)	21(35.00)	7(11.67)	13(21.67)	27(45.00)	20(33.33)
8.	Insurance of the animals	21(35.00)	23(38.33)	16(26.67)	6(10.00)	6(10.00)	48(80.00)

It was evident from the results of the Table 2 that, cent per cent of the trained and untrained dairy farm women were fully adopted the practice of removing mucus from nose and mouth of the calves just after birth and providing treatment of the umbilical cord to newly born calf, followed by large majority of the trained (95.00%) and untrained (75.00%) dairy farm women were fully adopted the practice of offering medicines to the sick animals from veterinary doctor. Whereas, controlling the insect problems in animal shed (lice, bug, mosquitoes and flies *etc.*) was partially adopted by large majority of the trained (90.00%) and untrained (71.67%) dairy farm women. Further, it was noticed that majority of the trained (85.00%) and untrained (63.33%) dairy farm women were fully and partially adopted the vaccination of animals timely and regularly, respectively. While, practicing deworming in calves for the prevention of parasitic diseases was fully and partially adopted by majority of the trained (83.33%) and more than half of the untrained (58.33%) dairy farm women, respectively. It could also be observed that, majority of the trained (71.67%) and a considerable percentage of the untrained (43.33%) dairy farm women were fully adopted the segregating the diseased animals suffering from contagious disease from healthy animals. Whereas, in case of daily washing of the animals (grooming/bathing of animals), more than half percentage of the trained (61.67%) and untrained (58.33%) dairy farm women were found in full and partial adoption, respectively. The

findings of Chaudhari (2006), Murai & Singh (2011), Kashappa (2013) and Pharate *et al.* (2013) lend support to the findings of the present study.

A cursory look in to the Table 2 reported that, in case of practicing the methods of identifying animals 38.33 per cent of trained and large majority of untrained (80.00%) dairy farm women were found in partial adoption and non-adoption, respectively. Whereas, with respect to controlling the bad habits in animals, it was observed that large majority of the trained and untrained dairy farm women were fully controlled the bad habits of fence breaking/jumping (98.33% and 91.67%); eating rope, cloths and plastics (98.33% and 80.00%) and kicking (90.00% and 83.33%), respectively. Whereas, majority of the trained (71.67%) and untrained (61.67%) dairy farm women were fully and partially controlled the bad habit of licking, respectively. The results of the study also indicated that, large majority of the trained (96.67%) and more than fifty per cent of the untrained (53.33%) dairy farm women were found in full and non-adoption of using the clean/washed utensils for milking and does not using these utensils for other purposes, respectively. While, in case of practicing the dry period in cow/buffaloes before 3 months of parturition, majority of the trained (93.33%) and untrained (78.33%) dairy farm women were found in full and partial adoption, respectively. Further, in case of filtering milk with a sieve or muslin cloth after milking, majority of the trained (63.33%) and a considerable percentage of the

untrained (45.00%) dairy farm women were found in full and partial adoption, respectively.

Further, it could also revealed that half percentage of the trained (50.00%) and as high as 46.67 per cent of the untrained dairy farm women were found in partial and non-adoption of practicing full hand method of milking. With respect to maintenance of records, it could also be observed that, majority of the trained and untrained dairy farm women were fully adopted the practices of maintenance of breeding record (95.00% and 60.00%) and milk sale record (76.67% and 60.00%), respectively. Further, it could also be noticed that more than half percentage of the trained (58.33%) and untrained (53.34%) dairy farm women were found in full and non-adoption of maintenance of animal feed/fodder record. While, animal health record was fully and partially adopted by majority of the trained (53.33%) and as high as 45.00 per cent of the untrained dairy farm women. However, the results also revealed that as high as 38.33 per cent of the trained and large majority (80.00%) of the untrained farm women were found in partial and non-adoption of insurance of animals, respectively. The findings were in line with the Chaudhari (2006), Halakatti *et al.* (2007) and Veeranna & Singh (2004).

A critical perusal of the data presented in Table 3 portrays that, overall extent of adoption of dairy management practices

Table 3. Comparison between the trained and untrained dairy farm women members of SHGs with their overall extent of adoption of dairy management practices n=120

Respondents	Mean Score	S.D	Calculated 'z' value
Trained(n ₁ =60)	128.45	5.50	13.41**
Untrained(n ₂ =60)	114.03	6.25	

** Significant at 0.01 level

of trained dairy farm women members of SHGs was significantly higher than those of untrained dairy farm women members of SHGs at one per cent level of significance, as revealed by the results of 'z' test analysis. The increased score of adoption in trained dairy farm women may be attributed to the training imparted by KVK. The findings are in agreement with that of Chaudhari (2006), Murai & Singh (2011) and Rahman & Gupta (2015).

From the results it could be concluded that, there was a significant difference between trained and untrained dairy farm women members of SHGs in adoption of dairy management practices. Therefore, the Government, Agriculture/Veterinary Universities, KVKs and other extension agencies must periodically conduct training and awareness programmes with respect to Feeding, Breeding, Health Care and Management *etc.* to boost up the level of adoption of improved dairy management practices and thereby helps in increasing the socio-economic condition of dairy farmers/farm women.

Reference

- Chaudhari, R. R., 2006, A study on entrepreneurial behaviour of dairy farmers. *M.Sc. (Agri.) Thesis*, Univ. Agric. Sci., Dharwad, Karnataka, India.
- Halakatti, S. V., Sajjan, C. M., Gowda, D. S. M. and Kamaraddi, V., 2007, Empowerment of women through dairy training. *Karnataka J. Agric. Sci.*, 20(1): 89-92.
- Kashappa, N. M., 2013, A comparative study on dairy and non-dairy farmers in Belgaum district. *M. Sc. Thesis*, Univ. Agric. Sci., Dharwad, Karnataka, India.
- Meena, G. L., Tailor, R. and Sharma, F. L., 2012, Adoption of scientific dairy husbandry practices by tribal farmers. *Rajasthan. J. Ext. Edu.*, 20(1): 121-124.
- Murai, A. S. and Singh, B. K., 2011, Differential adoption of scientific dairy farming practices and related constraints. *Indian Res. J. Ext. Edu.*, 11(2): 46-49.
- Pharate, D. N., Tarde, V. J., Shrike, V. S. and Shinde, S. B., 2013, Adoption level of the farmers about improved dairy technology. *Asian J. Ext. Edu.*, 27(1): 53-59.
- Rahman, S. and Gupta, J., 2015, Knowledge and adoption level of improved dairy farming practices of SHG members and non-members in Kamrup district of Assam, India. *Indian J. Anim. Res.*, 49(2): 234-240.
- Veeranna, K. C. and Singh, D. P., 2004, Attitude and adoption of improved dairy production practices by lambani tribe. *Karnataka, J. Agric. Sci.*, 17(2): 299-302.