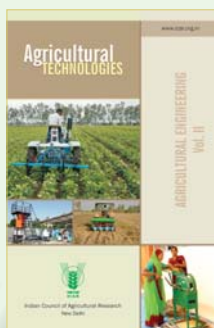
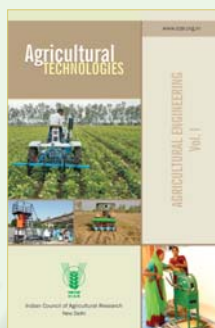
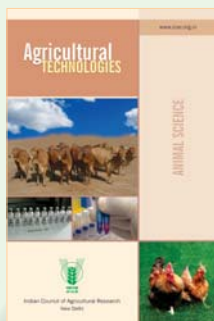


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Agricultural Technologies Commercialized/Ready for Commercialization

ANIMAL SCIENCE



Indian Council of Agricultural Research
New Delhi

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शरद पवार
SHARAD PAWAR



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भारत सरकार
MINISTER OF AGRICULTURE &
FOOD PROCESSING INDUSTRIES
GOVERNMENT OF INDIA


Message



Indian agriculture has overcome several challenges in the past and achieved phenomenal success ensuring self-sufficiency in food production. The technologies generated within the National Agricultural Research System (NARS) have significantly contributed to the transformation of Indian agriculture and ushering Rainbow Revolution representing Green, White, Golden, Brown and Blue revolutions defining outstanding technology-led performance in foodgrain, milk, oilseeds and pulses, horticulture and fisheries sectors. Agriculture along with other primary sectors is a major source of strength for the Indian economy. However, burgeoning population, increasing demand for food, feed and fodder, decreasing land availability, natural resource degradation, decreasing factor productivity, climate change, slow growth in farm income and new global trade regulations have put new challenges threatening food, nutritional and livelihood security.

Technological interventions by the NARS have led to spectacular accomplishments relating to input use efficiency, climate resilience, mechanization and secondary agriculture leading to economic transformation. These coupled with the application of information and communication technology will play a critical role in our future endeavours to accelerate agricultural growth in the country. I am glad that the Subject Matter Divisions of Indian Council of Agricultural Research (ICAR) have synthesized and compiled practical and useful technologies in this series of publications on Agricultural Technologies in a user-friendly mode. I am sure this information will be useful to farming community, extension agencies, entrepreneurs and agro-industries in their efforts to make Indian agriculture economically viable and ecologically secure.

January 2014
New Delhi



(Sharad Pawar)

Foreword

Agriculture is the corner-stone of Indian economy. About 70% of India's 1.27 billion population live in rural areas with small and marginal land holdings. India with a geographical area of over 328 million hectares is endowed with diversity of climate, soils and vegetation. This rich resource endowment is, however, threatened with ever increasing population, vagaries of nature and climate change. The National Agricultural Research System (NARS) comprising the Indian Council of Agricultural Research (ICAR), 55 State Agricultural Universities, five Deemed Universities, four Central Universities with agriculture faculty, one Central Agricultural University and 637 Krishi Vigyan Kendras have attained excellence in several frontier areas of agricultural sciences and technology contributing significantly towards the spectacular growth of Indian agriculture during past 60 years.

Initiatives by NARS in the country have led to notable accomplishments resulting in the socio-economic transformation of farmers. The agriculture sector is, however, witnessing radical changes and challenges both at national and global level. The emerging challenges and opportunities necessitate wider and faster adoption of the improved technologies by all the stakeholders right from production to consumption in a food chain. In an effort to achieve this, the divisions of crop science, horticulture, animal science, natural resources management, fisheries and agricultural engineering in the ICAR have compiled the technologies already commercialized and the technologies ready for commercialization. This series of publications, brings out the salient features of the technologies with details on potential users and contact details of the developers for ready and easy access. It will be our endeavour to periodically update this Technology Series. I hope that this publication would be useful to the farming community, extension agencies, entrepreneurs and industry. I greatly appreciate the efforts put in by my colleagues in the Council, research institutes and State Agricultural Universities (SAUs) in bringing out this compilation.



(S Ayyappan)

Secretary,

Department of Agricultural Research and Education, and

Director General

Indian Council of Agricultural Research

New Delhi

January 2014
New Delhi

Preface

The research and development outcome needs to be expressed into viable and visible technologies. Popularization and commercialization of patent technologies are essential for upscaling and dissemination to stakeholders and application in overall productivity enhancement with quality assurance. The researchers should turn their inventions/innovations into business opportunities to make a positive impact on the livestock sector in the country.

This endeavour is a bouquet of technologies, commercialized and ready for commercialization, which have been collated to cover animal genetic resources, animal production and health (diagnostics and vaccines), products and processes. This will encourage entrepreneurship and help in developing linkages, between the research organizations and small and large commercial houses for future need-based research and also financial support.

The compilation has a wide range of technologies developed by Animal Science Research Institutes and State Veterinary Universities and the National Agricultural Research System.

With the active patronage of Dr S. Ayyappan, Secretary, DARE and DG, ICAR- the Animal Science Division of the ICAR foresees that this collection of technologies will serve not only as a valuable source for various technologies for stakeholders but also give impetus for development of need-based technologies for farmers and small/large commercial houses through close collaboration between the indentors, the research organizations and Universities for contributing towards the compilation for the benefit of the Animal Sector of the country.

Dr K M L Pathak
Deputy Director General (Animal Science)
ICAR, New Delhi

CONTENT

<i>Message</i>	iii
<i>Foreword</i>	v
<i>Preface</i>	vii

Technologies: Commercialized

Animal Genetic Resources

CARI-Brown	1-2
CARI-Ujjwal	3-4
CARI-Uttam	5-6
CARI-Sunheri	7-8
CARI-Sweta	9-10
CARI-Pearl	11-12
CARI-Swetambari	13
CARI-Chitambari	14-15
CARI-Kadambari	16-17
CARIBRO-Dhanraja	18
CARIBRO-Vishal	19
CARIBRO-Mritunjai	20
CARIBRO-Tropicana	21-22
CARI-Priya	23-24
CARI-Sonali	25-26
CARI-Debendra	27-28
Commercial Broiler Stock IBL-80	29
Punjab White Quail	30
Punjab Red: Synthetic Stocks	31

Animal Production and Health

Makefeed Poultry – Feed Formulation Software	32
Semen Diluent for Chicken	33
Urea Molasses Mineral Block Prepared by Cold Process (<i>Pashu Chocolate</i>)	34
Area Specific Mineral Mixture (ASMM) for Uttar Pradesh	35-36
Cryscope	37-38
Area Specific Mineral Mixture (ASMM) for Karnataka	39
Alquit; A Novel Herbal Ectoparasiticide	40

Animal Products Technology

Salted Chicken Egg	41
Pickled Eggs	42
Chicken Gizzard Pickle	43
Cooked Chicken Stock (one minute curried chicken)	44
Mixed Chicken Loaf	45
Cooked Chicken Roll	46
Functional Chicken Nuggets	47

Low Cholesterol Ghee	48
Calcium Enrichment of Milk	49
Technologies for Packaging of Fresh Buffalo Meat for Improved Shelf Life	50
TANUVAS Chicken Patties	51
TANUVAS Chicken Nuggets	52
Diagnosics and Vaccines	
Live Attenuated Homologous Peste des Petits Ruminants Vaccine for Small Ruminants	53-54
Foot and Mouth Disease Vaccine (FMD)	55
Live Attenuated Vero Cell based Vaccine for Control of Goat Pox in Goats	56-57
A Test for the Detection of Detergent in Synthetic Milk	58
Microbial Drug Residues (MDR) Test Kit for Broad Spectrum Detection of Antibiotics Residues in Milk	59-60
Field Spot Test to Detect Urea in Milk	61
Schizont Cell Culture Vaccine for Theileriosis	62
Multivalent Inactivated Adjuvanted Bluetongue Vaccine	63
TANUVAS Fowl Cholera Inactivated Vaccine	64
TANUVAS Ranikhet Disease Inactivated Vaccine	65
TANUVAS D58 Newcastle Disease Oral Pellet Vaccine	66
TANUVAS Live Attenuated Peste des Petits Ruminants (PPR) Vaccine	67
Technologies: Ready for Commercialization	
Animal Genetic Resources	
Frozen Semen Doses of Progeny Tested Murrah Bulls	68
Frieswal	69
Superior Breeding Rams and Bucks	70
Vanaraja™	71-72
Gramapriya®	73-74
Krishibro®	75
Synthetic Strain of Pig for Productivity Enhancement	76
Madhavaram Chicken-1	77
Animal Production and Health	
Induction of Lactation in Infertile Buffaloes	78
Complete Feed Blocks for Buffalo	79
Package of Practices for Raising Buffalo Broilers in Field	80
Ovsynch Plus Protocol for Oestrus Induction and Ovulation Synchronization in Anoestrus Buffaloes	81
Area Specific Mineral Mixture (ASMM) for Haryana	82
Development of Post Milking Teat Dip based on a Novel Herbal Formulation for the Prevention of Bovine Sub Clinical Mastitis	83
Biorganic-Mineral Formulation for Skin Ailments in Animal	84
A Phyto-Pharmaceutical Preparation for the Control of Acaricide Resistant Tick Infestations in Animals	85
IVRI Anti Diarrheal Herbal Formulation	86
Mineralized Urea Molasses Liquid Supplement (MUMLS)	87
Compressed Complete Feed Blocks (CCFB)	88

Molasses and Concentrate Mixture Impregnated Urea Ammoniated Wheat Bhoosa Based Diet	89
Anti Methane	90
Probiotic for Calf	91
Probiotic for Cows	92
Mineral Based Technology for Estrus Induction and Synchronization in Bovines	93
Epoxy –Pin External Skeletal Fixation for Management of Compound Fractures in Small Animals and Birds	94
Bilateral External Skeletal Fixation	95
Area –Specific Mineral Mixture	96
Low Cost High-Nutrition Feed Block for Mithun	97
Estrus Synchronization of Mithun Females and Fixed Time Insemination	98
Indigenous Progesterone Impregnated Vaginal Sponges for Estrus Synchronization in Sheep	99
Area Specific Mineral-Mixture for Augmenting Reproduction and Production in Sheep	100
Cure conjunctivitis : A Herbal Eye Drop	101
Healing Touch : A Poly-Herbal Wound Healer and Fly Repellant	102
Complete Feed Block for Sheep	103
Artificial Insemination in Pig	104
Mineral Mixture for Small Ruminants	105
Xylo-Oligosaccharrides from Finger Millet Straw	106
Xylo-Oligosaccharides from Corn by Products	107
Use of Areca Sheath as an Alternative to Dry Roughage in Total Mixed Ration Complete Feed Block (CFB)	108
Area Specific Mineral Mixture (ASMM) Pellets for Sheep	109
Micronutrient Supplement for Pigs Reared on Hotel Waste	110
Chelated Copper and Zinc for Livestock Feeding	111
Novel Herbal Anti-diarhoeal Drug for Animals	112
Intra Vaginal Pessaries for Augumentation of Reproduction in Goats	113
Areamix : An Area Specific Mineral Mixture for Livestock	114
Urea Treated Wheat Straw in Composite Feed Block	115
Groundnut Gotar in Ration of Growing Gir Calves	116
Groundnut Gotar and Wheat Straw as the Ration of Milch Gir Cows	117
Milk Replacer for Gir Calves	118
Uromin Lick	119
Mineral Mixture	120
Area Specific Mineral Mixture for Dairy Animals of Punjab	121
Copper Glycinate for Copper Deficiency	122
Ethiodized Oil (Iodine Supplement)	123
Area Specific Mineral Formulation	124
Animal Products Technology	
Emulsion Based Chicken Products	125
Emulsion Based Mutton and Chevon Products	126
Chicken Meat Chips	127
Incorporation of Vegetables in Meat Products	128

Meat Pickle	130
Functional Mutton Nuggets with Low Salt, Low Fat and High Dietary Fibre	131
Functional Paneer from Yak Milk	132
Value Added Mutton Products for Increasing Profit, Shelf life and Convenience	133
Processing Value Added Pork Products (Choice Pork)	134
Biofunctional Probiotic Fermented Strawberry Whey Drink	135
Buffalo Casein Hydrolysates Rich in Caseinophosphopeptides	136
Technology for Specialty Meat Products with Health and Nutritional Benefits	137
Retort Pouch for the Development of Shelf-stable ready-to-eat (RTE) Products	138
Curing and Smoking of Value Added Meat Products	139
Enrobed Chicken Meat Products	140
Emulsion Technology for Value Added Meat Products	141
Chicken-Gongura Pickle and Chicken Soup	142
Quarg Type Fresh Cheese with Enhanced Health Attributes and Shelf Life	143
Feta Cheese from Buffalo Milk using Microbial Rennet	144
Mozzarella Type Cheese using Skim Milk and Vegetable Oils/Commercial Fat Replacers	145
Technology of Fruit Lassi	146
Goat meat Murukku : A Crispy Food Products	147
Goat Milk soap AJAS	148
Value Added Products of Mithun Meat	149
Value Added Products of Mithun Milk	150
Value Added Products of Mithun Leather	151
Camel Milk Kulfi	152
Flavoured Milk	153
Camel Milk Peda	154
Camel Milk Chocolate Barfi	155
Camel Milk Rasogolla	156
Camel Milk Cheese	157
Camel Milk Gulabjamun	158
TANUVAS ICAR Pet Treat	159
Extruded Chicken Products	160
Extruded Beef Products	161
Restructured Buffalo Meat	162
Diagnostic and Vaccines	
Brucella	163
Low-volume Saponified Haemorrhagic Septicaemia Vaccine	164
Vero Cell Based Live Attenuated Vaccine for Control of Sheep Pox	165
Swine Fever Cell Culture Vaccine (CFSV)	166
Anti-Hyalomma Tick Vaccine	167-168
Monoclonal Antibody Based Sandwich-ELISA Kit for <i>Peste des petitis</i>	169
Ruminants Virus Antigen Detection	
Monoconal Antibody Based Competitive-ELISA Kit for <i>Peste des petitis</i>	170
Ruminants Virus Antibody Detection	
Recombinant Antigen Based Leptospirosis Detection Kit	171
Recombinant Antigen Based Rapid Immunoassay for Sero Diagnosis of Infectious Bursal Disease (IBD)	172

Caprine Pleuropneumonia Diagnostic Kit	173
Bluetongue Indirect-ELISA Kit	174
Recombinant Protein Based Serodiagnostic for Surra Caused by <i>Trypanosoma evansi</i>	175
A Novel Peptide as Transfection Reagent for Protein and Nucleic Acids	176
Type -Foot and Mouth Disease (FMD) Kit	177
Liquid Phase Blocking ELISA (LPBE) -FMD	178
DIVA FMD Indirect	179
DIVA FMD Competitive	180
mPCR FMD Kit	181
FMD Multiple NSP Panel DIVA Indirect	182
Genotype/Lineage FMD	183
Semen Test Kit for FMD	184
Equiherpabort Vaccine	185
Equiherpes B-ELISA Kit	186
Equip Rotavirus Test	187
Kit for Detection of Antibodies against <i>Theileria equi</i>	188
Pregmare Kit for Pregnancy Diagnosis in Horse Mares	189
Molecular Screening of PSE pork and PSS condition in Pig	190
A New Test for the Detection of Detergent in Milk	191
Kit for Detection of Milk Adulteration	192
A Novel Enzyme-Substrate Based Bio-Assay for Real Time Detection of <i>Listeria monocytogenes</i> in Milk	193
A Novel Selective Medium and Micro-technique for Detection of <i>Enterococci</i> in Milk	194
Spore Inhibition Based Enzyme Substrate Assay for Monitoring Aflatoxin M1 in Milk	195
Polymerase Chain Reaction Techniques for Speciation of Meat	196
Plate ELISA Kit for the Diagnosis of Johne's Disease	197
Kit for Parentage Verification of Zebu Cattle (<i>Bos indicus</i>)	198
Kit for Parentage Verification in Camels (Single and Double Humped)	199
Kit for parentage verification in Buffaloes (<i>Bubalus bubalis</i>)	200
AB –ELISA Kit for Detection of Antibodies to IBR in Bovine Sera	201
Protein-G ELISA kit for Bovine Brucellosis	202
Leptospira Staining Kit	203
Indirect ELISA Kit for Sheep and Goat Brucellosis	204
Early Detection of Amyloid in Biopsy	205
Mastitis Diagnosis and Prophylaxis Kits	206-207
Cell Culture Attenuated Classical Swine Fever Virus (CSFV) Vaccine	208
Indirect ELISA for Detecting immune response of pigs after CSFV vaccination	209
Monoclonal Antibody Based Latex Agglutination Test for Field Diagnosis of Surra	210
Synthesis and Applications of Polyacrylamide Gels Catalyzed by Silver Nitrate	211
Primer Pair to Detect the Buffalo Tissue	212
Protein-G Based Technology for the Diagnosis of Brucellosis in Buffaloes	213
Fluorescence Polarization Assay for Diagnosis of Brucellosis in Buffaloes	214

ELISA Kit for Monitoring Hemorrhagic Septicemia Antibodies in Cattle and Buffalo	215
Rapid Field Test for Diagnosis and Hemorrhagic Septicemia (HS) in Cattle and Buffalo	216
Rapid Latex Agglutination Test Kit for Chicken Anaemia Virus Antibody Detection	217
An Indirect ELISA Kit for Chicken Anaemia Virus Antibody Detection	218
TANUVAS Haemorrhagic Septicaemia (HS) Bio Film Vaccine for Small Ruminants	219
Live Attenuated Infectious Bronchitis Virus Vaccine	220
Inactivated Penta Valent Leptospiral Vaccine	221
Novel Vaccine Against <i>Haemonchus contortus</i>	222

1. Technologies: Commercialized

Animal Genetic Resources

CARI-Brown



Salient features

- Japanese quails are highly prolific birds and suitable for different agro-climatic conditions in India

Performance

- Heavy body weight-cum-meat type
 - Plumage colour : completely brown
 - Age at sex maturity : 38-41 days
- Body weight at 5 week : 180 to 185 g
 - Daily feed consumption : 25-28 g
 - Hatchability on total egg set : 60-65%

Cost

- Germplasm pure line adult Japanese quails @ ₹ 45 (either sex)
- Germplasm pure line fertile eggs @ ₹ 15/egg (either meat or egg type)

Impact and benefits

- Indian quail cannot be bred in captivity for commercial farming. However, the Japanese quail can be reared in captivity; highly prolific birds for breeding and commercialization as an alternative to chicken
- Japanese quail (*Coturnix Japonica*) is not a wild quail and as such not a scheduled protected wild bird as defined under sub-section 36 of section 2 of the Wildlife (Protection) Act, 1972. Act schedule IV includes only Quails Rhasianidae (Indian quail) and not the Japanese quail, which was brought to India by CARI from abroad
- The variety is highly disease resistant without any routine immunization and vaccination. It is easy to manage quails as they require less feed, minimum space and affordable investment

Name and addresses of the firms/entrepreneurs to whom the technology has been transferred

- GraceFarm Innovations- Rural Employment & Educational Trust (GI-REET), Kayakumari district of Tamil Nadu; Agribusiness Management Centre,

Ghaziabad, Uttar Pradesh. The improved quail germplasm was also supplied to different organizations/poultry farmers/entrepreneurs in the different regions of the country which includes supply to United Poultry Farm, Gonda, Uttar Pradesh; U.P. State Government Poultry Farm, Chak Gajaria, Lucknow; BHU, Varanasi, Uttar Pradesh; M/s Cipra Associate, Jamalpur Road, Patna; Baba Poultry farm, Gaya, Bihar; Assistant Director, Puralia, West Bengal; Deputy Director ARO (PM), West Bengal; RAU, Pusa, Samastipur; Veterinary College, Ranchi (Jharkhand); CPDO, Bhuwneshwar; CSIR, AIIMS and Shriram Honda Research Institute, New Delhi.

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CARI-Ujjwal



Salient features

- Japanese quails are highly prolific and suitable for different agro-climatic conditions in India

Performance

- Heavy body weight-cum-meat type

- Body weight at 5 week : 175 g
- Feed efficiency : 2.80
- Daily feed consumption : 25-28 g
- Hatchability on total egg set : 65%

Cost

- Germplasm pure line adult Japanese quails @ ₹ 45 (either sex)
- Germplasm pure line fertile eggs @ ₹ 15/egg (either meat or egg type)

Impact and benefits

- Indian quail cannot be bred in captivity for commercial farming. However, the Japanese quail can be reared in captivity; highly prolific birds for breeding and commercialization as an alternative to chicken
- The variety is highly disease resistant without any routine immunization and vaccination. It is easy to manage quails as they require less feed, minimum space and affordable investment

Name and addresses of the firms/entrepreneurs to whom the technology has been transferred

- GraceFarm Innovations- Rural Employment & Educational Trust (GI-REET), Kayakumari district of Tamil Nadu; Agribusiness Management Centre,

Ghaziabad, Uttar Pradesh. The improved quail germplasm was also supplied to different organizations/poultry farmers/entrepreneurs in the different regions of the country which includes supply to United Poultry Farm, Gonda, Uttar Pradesh; U.P. State Government Poultry Farm, Chak Gajaria, Lucknow; BHU, Varanasi, Uttar Pradesh; M/s Cipra Associate, Jamalpur Road, Patna; Baba Poultry Farm, Gaya, Bihar; RAU, Pusa, Samastipur; Assistant Director, Puralia, West Bengal; Deputy Director ARO (PM), West Bengal; Ranchi Veterinary College, Ranchi (Jharkhand); CPDO, Bhuwadeshwar; CSIR, AIIMS and Shriram Honda Research Institute, New Delhi.

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CARI-Uttam



Special feature

- Japanese quails are highly prolific birds and suitable to different agro climatic conditions in India

Performance

- Heavy body weight-cum-meat type
- Body weight at 5 week : 240 g
- Feed efficiency : 2.51
- Daily feed consumption : 25-28 g
- Hatchability on total egg set : 70-75%

Cost

- Germplasm pure line adult Japanese quails @ ₹ 45 (either sex)
- Germplasm pure line fertile eggs @ ₹ 15/egg (either meat or egg type)

Impact and benefits

- Indian quail cannot be bred in captivity for commercial farming. However, the Japanese quail can be reared in captivity; highly prolific birds for breeding and commercialization as an alternative to chicken
- The variety is highly disease resistant without any routine immunization and vaccination. It is easy to manage quails as they require less feed, minimum space and affordable investment

If commercialized, name and addresses of the firms/entrepreneurs to whom the technology has been transferred

- GraceFarm Innovations- Rural Employment & Educational Trust (GI-REET), Kayakumari district of Tamil Nadu; Agribusiness Management Centre,

Ghaziabad, Uttar Pradesh. The improved quail germplasm have also been supplied to different organizations/poultry farmers/entrepreneurs in the different regions of the country which includes supply to United Poultry Farm, Gonda, Uttar Pradesh; U.P. State Government Poultry Farm, Chak Gajaria, Lucknow; BHU, Varanasi, Uttar Pradesh; M/s Cipra Associate, Jamalpur Road, Patna; Baba Poultry Farm, Gaya, Bihar; RAU, Pusa, Samastipur; Assistant Director, Puralia, West Bengal; Ranchi Deputy Director ARO (PM), West Bengal; Ranchi Veterinary College, Ranchi (Jharkhand); CPDO, Bhuwneshwar; CSIR, AIIMS and Shriram Honda Research Institute, New Delhi.

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CARI-Sunheri



Special feature

- Japanese quails are highly prolific birds and suitable for different agro-climatic conditions in India

Performance

- Heavy body weight-cum-meat type
 - Age at sex maturity : 43 days
 - Body weight at 5 weeks : 182 g
- Feed conversion ratio : 2.8
 - Average egg weight : 11 g
 - Age at 50 per cent egg production : 8 weeks
 - Age at peak egg production : 12-13 weeks
 - Hatchability on total egg set : 68 %

Cost

- Germplasm pure line adult Japanese quails @ ₹ 45 (either sex)
- Germplasm pure line fertile eggs @ ₹ 15/egg (either meat or egg type)

Impact and benefits

- Indian quail cannot be bred in captivity for commercial farming. However, the Japanese quail can be reared in captivity; highly prolific birds for breeding and commercialization as an alternative to chicken
- This variety is highly disease resistant without any routine immunization and vaccination. It is easy to manage quails as they require less feed, minimum space and affordable investment

Name and addresses of the firms/entrepreneurs to whom the technology has been transferred

- GraceFarm Innovations- Rural Employment & Educational Trust (GI-REET), Kayakumari district of Tamil Nadu; Agribusiness Management Centre,

Ghaziabad, Uttar Pradesh. The improved quail germplasm was also supplied to different organizations/poultry farmers/entrepreneurs in the different regions of the country which includes supply to United Poultry Farm, Gonda, Uttar Pradesh; U.P. State Government Poultry Farm, Chak Gajaria, Lucknow; BHU, Varanasi, Uttar Pradesh; M/s Cipra Associate, Jamalpur Road, Patna; Baba Poultry Farm, Gaya, Bihar; RAU, Pusa, Samastipur; Assistant Director, Puralia, West Bengal; Deputy Director ARO (PM), West Bengal; Ranchi Veterinary College, Ranchi (Jharkhand); CPDO, Bhuwadeshwar; CSIR, AIIMS and Shriram Honda Research Institute, New Delhi.

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CARI-Sweta



Special feature

- Japanese quails are highly prolific birds and suitable for different agro-climatic conditions in India

Performance

- Low body weight line or eggger type
 - Body weight at 5 week : 155 to 165 g
 - Feed efficiency : 2.70
- Daily feed consumption : 25 g
 - Hatchability on total egg set : 50-60%

Cost

- Germplasm pure line adult Japanese quails @ ₹ 45 (either sex)
- Germplasm pure line fertile eggs @ ₹ 15/egg (either meat or egg type)

Impact and benefits

- Indian quail cannot be bred in captivity for commercial farming. However, the Japanese quail can be reared in captivity; highly prolific birds for breeding and commercialization as an alternative to chicken
- This variety is highly disease resistant without any routine immunization and vaccination. It is easy to manage quails as they require less feed, minimum space and affordable investment

Name and addresses of the firms/entrepreneurs to whom the technology has been transferred

- GraceFarm Innovations- Rural Employment & Educational Trust (GI-REET), Kayakumari district of Tamil Nadu; Agribusiness Management Centre,

Ghaziabad, Uttar Pradesh. The improved quail germplasm was also supplied to different organizations/poultry farmers/entrepreneurs in the different regions of the country which includes supply to United Poultry Farm, Gonda, Uttar Pradesh; U.P. State Government Poultry Farm, Chak Gajaria, Lucknow; BHU, Varanasi, Uttar Pradesh; M/s Cipra Associate, Jamalpur Road, Patna; Baba Poultry Farm, Gaya, Bihar; RAU, Pusa, Samastipur; Assistant Director, Puralia, West Bengal; Deputy Director ARO (PM), West Bengal; Ranchi Veterinary College, Ranchi (Jharkhand); CPDO, Bhuwadeshwar; CSIR, AIIMS and Shriram Honda Research Institute, New Delhi.

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CARI-Pearl



Special features

- Japanese quails are highly prolific birds and suitable for different agro-climatic conditions in India

Performance

- Low body weight line or eggger type
 - Body weight at 5 week : 140 g
- Daily feed consumption : 20-25 g
 - Age of 50 per cent egg production : 8 weeks
 - Age of 80 per cent egg production : 10 weeks
 - Hen day production : 285-295 eggs
 - Hatchability on total egg set : 70-80%

Cost

- Germplasm pure line adult Japanese quails @ ₹ 45 (either sex)
- Germplasm pure line fertile eggs @ ₹ 15/egg (either meat or egg type)

Impact and benefits

- Indian quail cannot be bred in captivity for commercial farming. However, the Japanese quail can be reared in captivity; highly prolific birds for breeding and commercialization as an alternative to chicken
- This variety is highly disease resistant without any routine immunization and vaccination. It is easy to manage quails as they require less feed, minimum space and affordable investment

Name and addresses of the firms/entrepreneurs to whom the technology has been transferred

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CARI- Swetambari



Special feature

- The birds were developed through selective selection and breeding programme from a wide base stock. These birds have been improved for high disease resistance and better growth

Performance

- Pure white in colour
- Body weight at 12 weeks : 920-980 g
- Age at first egg : 230-250 days
- Egg weight : 38-40 g
- Egg production (March to September) : 100-115 eggs
- Fertility : 70-75%
- Hatchability : 70-80%
- Livability : excellent

Cost

- Adult female ₹ 130/bird
- Adult male ₹ 150/bird

Impact and benefits

- There is no requirement of elaborate and expensive housing. It has excellent foraging capabilities and consumes all non-conventional feed not used in chicken feed. It is more tolerant to mycotoxins
- Guinea fowl meat is rich in vitamins and low in cholesterol

Name and addresses of the firms/entrepreneurs to whom the technology has been transferred

- The germplasm has been supplied to different organizations / poultry farmers / entrepreneurs in the different regions of the country

Contact

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CARI- Chitambari



Special features

- The birds were developed through selective selection and breeding programme from a wide base stock. These birds have been improved for high disease resistance and better growth

Performance

- White spot on gray plumage
- Body weight at 12 weeks : 970-1,000 g
- Age at first egg : 232-251 days
- Egg weight : 38-40 g
- Egg production (March to September) : 105-125 eggs
- Fertility : 70-73%
- Hatchability : 70-80%
- Livability : excellent

Cost

- Adult female ₹ 130/bird
- Adult male ₹ 150/bird

Impact and benefits

- There is no requirement of elaborate and expensive housing. It has excellent foraging capabilities and consumes all non-conventional feed not used in chicken feed. It is more tolerant to mycotoxins. Guinea fowl meat is rich in vitamins and low in cholesterol
- It is a hardy bird, suitable for any agro-climatic condition

Name and addresses of the firms/entrepreneurs to whom the technology has been transferred

- The germplasm has been supplied to different organizations / poultry farmers/ entrepreneurs in the different regions of the country

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