Annex-2

Priority Research Areas Suggested Under Basic and Strategic Research (BSR)

a. Genetic enhancement (Plants)

1. Genetic enhancement of input use effciency.
2. Making novel gene constructs and identifying tissue growth stage in specific promoters.
3. Development of novel tools for production of hybrids in field and horticultural crops.
4. Genetic enhancement of input use efficiency of plants
5. Recombinant proteins.
6. RNA based biotechnology.
7. Taxonomical research with emphasis on germplasm resources of plants, animals and fishes.
8. Cytogenetical research in plant improvement.
9. Gene discovery, genetic enhancement and allele mining
10. Targeted integration of genes and organelle transformation
11. Gene pyramiding
12. Functional genomics/Proteomics/transcriptomics for response to biotic and abiotic stresses
13. Molecular diagnostics for plant pathogens
14. QTL identification, cloning and use in marker-assisted selection
15. Bio-prospecting the land biota for novel genes, bioactive molecules and products

b. Genetic enhancement (Animals/Fishes)

16. Genetic enhancement of input use efficiency of animals and fishes
17. Gene discovery, genetic enhancement and allele mining in farm animals and fishes
18. Proteomics/ transcriptomics for response to biotic and abiotic stresses
19. QTL identification, cloning and use in marker-assisted selection
20. Gene pyramiding in animals and fishes
21. Bio-prospecting the marine biota for novel genes, bioactive molecules and products
22. Stem cell research in fishes and animals
23. Molecular diagnostics and vaccines for farm animals
24. Autotransgenics in animals and fishes
25. RNA based biotechnology

c. Natural resource management (Plant)

26. Integrated management of pod borer, wilt and mosaic virus in pulses/ oilseeds/ vegetables.
27. Agricultural waste, byproduct and processing-waste based decentralized energy production.
28. Protected cultivation of high value crops
29. Production of fruits in non-traditional areas and seasons.
30. Multiple use of low and degraded quality water for agriculture and allied activities
31. Research on crop weed, pest and disease continuum
32. Conservation Agriculture
33. Farmer friendly diagnostic tools for testing purity of biofertilizers and biopesticides.
34. Mechanisation of small farms.

d. Natural resource management (Soil)

35. Studies on diversity, dynamics and interaction of soil microflora.
36. Impact of micronutrient deficiency in soil on crop, animal and human health.
37. Plant root-soil and soil microflora interaction.
38. Research into methods to control the availability and release of nutrients and carbon pool conservation and enhancement using strategic combinations of soil and organic and inorganic sources of nutrients
39. Research into GIS and low-cost electronic control systems for taking precision agriculture to small farms and multiple-cropping systems in India

e. Natural resource management (Animal/Fish)

40. Island fishery
41. Fish hatching technology with availability of choice of spp. for the farmer.
42. Research in to developing fish seed certification.
43. Research in veterinary and fish pharmacology and development of new drug molecules.
44. Validation of traditional medicines in treatment of animal diseases and drug discovery from ayurvedic preparations.
45. Enhancing nutrient-use efficiency in buffaloes and cattle by manipulating rumen microbes and enhancing nutrient qualities of low-value fodders

f. Natural resource management (Others)

46. Prevention of entry and management of alien plant, animal and fish spp.
47. Genetic enhancement of useful microbes.
48. Use of plants, animals and fish as bioreactors.
49. Long term environmental and socio-economic effects of biofuel agriculture.
50. Bioremediation for agriculturally relevant natural resources.
51. Climate change impact forecasting, characterisation and mitigation.
52. Input use efficiency in crops, animals and fishes
53. Development of the state-of-the-art plant, animal and fish disease surveillance and control system
54. Understanding the effects of climate change on agriculture through an integrated approach to air, water, soil and plants

g. PHT& Value Addition

55. Promotion of underutilised indigenous crops, vegetables and fruits through development of mass production, value addition, processing and identification of nutritional values.
56. Formulation foods.
57. Development of agricultural product standards.
58. Impact on nutritional balance sheet of food processing and storage.
59. Sanitary and phytosanitary aspects of major Indian agricultural, plants, animals and fish products
60. Novel value addition, innovative products, processing and storage methods for agricultural products and byproducts

h. Social Sciences

61. Research into agricultural extension methods.
62. Research into marketing systems, market outlook, market demand and maximising the profits of all stakeholders from the primary producer to the consumer
63. Studies on appropriate region, commodity and market based institutional innovations like contract farming, agri-commodity exchange, stakeholder held companies etc.
64. Agro-environmental economics under the present global scenario.
65. Research into technology forecasting systems.
66. Risk assessment and insurance products for protection of farmers.
67. Gender empowerment and mainstreaming.

i. Others

68. Research into information acquiring, storage, value addition and dissemination for Indian Agriculture.
69. Bioinformatics
70. Statistical research for experiments on farmers' fields and biotic and abiotic stress affected areas.
71. Biosensors
72. Nanotechnology
73. Use of non-conventional energy in agriculture
74. Biosystematics of insects, nematodes, fungi etc.