



Consultancy and Advisory Services

Consultancy/Advisory Services provided

- Provided the estimators for various characteristics under the study in the project entitled “India’s livestock feed balance and its environmental implications” jointly being carried out by SESR and NCAP, New Delhi.
- Dr. K.K. Sharma, Project Co-ordinator was advised regarding the sampling design for undertaking a national survey for 32 commodities to see the pesticide residue, on 16 September, 2004.
- As per request from CSO, a new project proposal on “Study for the Assessment of Survey Capabilities of Private Sector” was submitted to CSO, Ministry of Statistics & Programme Implementation, Govt. of India, New Delhi for approval and funding. The proposal has been approved for funding and MOU is yet to be signed.
- Project proposals for preparation of following manuals as a consultancy project have been

submitted to MOS & PI, CSO, New Delhi, for funding.

- (i) Area and Crop Production Statistics
- (ii) Animal Husbandry Statistics
- (iii) Agricultural Prices and Marketing
- (iv) Cost of Cultivation Surveys
- (v) Horticulture and Spices Statistics

All the five proposals have been approved for funding.

- Dr. A.K. Singh, Senior Scientist from Division of Genetics, IARI, New Delhi was advised on the combined analysis of data pertaining to an experiment conducted to study molecular divergence in relation to hybrid performance in rice. The experiment was conducted in a RCB design with 30 varieties and 3 replications. The experiment was conducted at four locations viz. Aduthurai, Delhi, Hyderabad and Varanasi. The data on 8 characters yield per plant, grain per plant, spikelet fertility, panicle length, tiller per

plant, plant height, 1000 seed weight, date of 50% flowering and days to maturity were observed. The data from 3 varieties at Delhi and one variety at Hyderabad location were missing in all the three replications. Therefore, the data were analyzed using the procedure of groups of experiments with some treatments common.

- The scientists from Central Potato Research Institute Campus, Modipuram were advised on the designing of long-term manurial/fertilizer experiment on potato based cropping systems. The experiment was planned with 28 treatment combinations (all possible combinations of 4 cropping systems and 7 fertilizer treatments).
- Dr. B.S. Tomar, Seed Production Unit, IARI, New Delhi was advised on the analysis of data pertaining to experiment conducted to study the effect of planting time, spacing and pinching on the seed yield and seed quality in marigold cv. usa Narangi Gaiinda. There were three dates of planting, September 15, October 15 and November 15. The dates of planting were taken as artificially created environments and the experiment was conducted using a randomized complete block design with 9 treatment combinations of three spacings (30' 30, 30'45 and 30'60 cm²) and three inching levels (control, 30 days after planting and 60 days after planting) each replicated thrice in each of the 3 environments. The data from each of the three experiments were analyzed individually and the mean square errors so obtained were used for testing the homogeneity of error variances. The procedure of groups of experiments was followed for the analysis. He was also advised on the analysis of data pertaining to experiment conducted to study the effect of planting methods and irrigation on onion. There were three methods of planting and two irrigation methods. The irrigation methods were taken as artificially created environments. The data from both experiments (with planting methods as treatments) were analyzed individually and the mean square errors so obtained were used for testing the homogeneity of error variances. The procedure of groups of experiments was followed for the analysis.
- Dr. Dinesh Kumar, Sr. Scientist, Division of Agronomy, IARI, New Delhi was advised on the

analysis of experimental data conducted for standardization of nitrification inhibiting property of Neem oil coated urea for Kharif Rice. 16 treatments were tried in the experiment that were all possible combinations of 5 sources of nitrogen viz. prilled urea, 500 ppm oil coated urea, 1000 ppm oil coated urea, 2000 ppm oil coated urea, 5000 ppm oil coated urea and three doses viz. 50, 100, 150 kg/ha and one absolute control. The experiment was conducted using a randomized complete block design. The analysis was carried out using the concepts of contrast analysis. A second order rotatable response surface design with orthogonal blocking for 4 factors each at 5 equispaced levels in 30 design points arranged in three blocks each of size 10 has been recommended for an experiment related to osmotic dehydration of the Aonla, planned to obtain the optimum combination of levels of solution to sample ratio, concentration of sugar solution, revolutions per minute and temperature of osmosis. The design was catalogued in the project on designs for fitting response surfaces in agricultural experiments.

- Provided consultancy services regarding analysis of AICRP groundnut yield trials data for simultaneous selection of genotypes for yield and stability at National Research Centre for Groundnut, Junagarh, Gujarat.
- Guidance and help were provided to agricultural workers from various SAUs and ICAR Institutes in analyzing the data and interpretation of results. An amount of about Rs.14000/- was collected for sale of software packages and analysis of data.
- Sh. Pankaj Gupta, Ph.D. (Agricultural Engineering), a student of IARI, New Delhi was advised on the analysis of data pertaining to an experiment conducted in laboratory to determine the design parameters of air-assisted spraying system influencing the application efficiency of pesticides on vegetable crops.
- A data set pertaining to an experiment conducted to test the performance of 11 varieties using a RCB design in 3 replications was received as a follow up action of Meeting of Senior Breeders Meeting of AICRP on Rapeseed and Mustard on April 05, 2004 at NRC-RM, Bharatpur. The experiment was conducted at 4 locations.

- The assumptions of normality (using Shapiro-Wilk test) and homogeneity of errors (using Bartlett's test for normal errors and Levene test for non-normal errors) were tested for the data from each of the locations. The results revealed that the assumptions of normality and homogeneity of error terms are not satisfied at two locations. The data from these locations were transformed using Box-Cox transformations. The data from one of the location remained heterogeneous even after Box-Cox transformation and hence, was analyzed using Friedman test. To see the effect of plant stand on the yield, analysis of covariance was performed using plant stand as covariate. For performing the combined analysis of data, the mean square errors (MSEs) of individual locations were used for testing the equality of error variance over locations. The error variances were found to be heterogeneous. Therefore, the data were transformed using the Aitken's transformation. The errors over combined locations were found to be non-normal. Therefore, it is felt that there is need to develop some statistical techniques for the combined analysis of non-normal data. It was also felt that there might be nearest neighbour correlation effects among the neighbouring units and the application of nearest neighbour methodology may improve the precision of variety comparison. For this analysis, we require the actual randomized layout of trial. The results have been sent to Director, National Research Centre on Rapeseed and Mustard, Bharatpur with a request to send the randomized layout of these trials.
- Sh. Sudhir Sharma, Ph.D. student of Department of Plant Breeding, CCS HAU, Hisar was advised on the analysis of data pertaining to an experiment conducted with 81 genotypes/hybrids of pearl millet conducted in a simple lattice design. He was also advised on obtaining the genetic parameters viz. genotypic variance, phenotypic variance, heritability coefficient and genotypic correlation. For this purpose, the procedure developed under the project "A diagnostic study of design and analysis of field experiments" was used.
- Sh. Ramavtar Jat, Ph.D. (Agronomy), a student of P.G. School, IARI, New Delhi was advised on the analysis of data pertaining to an experiment

conducted to study the response of pigeonpea + groundnut intercropping system to sulphur in conjunction with organic manure. The experiment was conducted using a split plot design. The main plot treatments were all combinations of two intercropping system (sole pigeonpea and pigeonpea + groundnut) and two levels of organic manure (no FYM and FYM @ 5t/ha). There were 7 subplot treatments that were all levels of 3 sources of sulphur (Elemental S, Gypsum and Cosavet) and 2 levels of (35, 70 kg/ha) and one control treatment i.e. no application of S. The analysis was carried out using the concepts of contrasts analysis.

- A reinforced alpha design in 55 (50 tests and 5 check varieties of tomato) arranged in 10 blocks each of size 15 was recommended to Dr. Mahender Singh, Head, Division of Germplasm Evaluation, NBPGR, New Delhi. The layout of the design recommended was:

Replication 1					Replication 2				
B1	B2	B3	B4	B5	B1	B2	B3	B4	B5
21	12	18	9	25	38	27	9	36	24
31	47	48	14	45	34	35	49	50	44
16	22	28	19	35	7	20	31	4	37
26	37	23	34	20	25	8	15	29	6
36	17	3	39	40	19	41	3	23	46
41	32	8	24	15	1	2	22	32	30
11	42	33	4	30	45	48	42	10	5
6	27	38	49	5	13	14	40	17	18
46	7	13	44	50	26	21	28	43	33
1	2	43	29	10	47	39	16	11	12
51	51	51	51	51	51	51	51	51	51
52	52	52	52	52	52	52	52	52	52
53	53	53	53	53	53	53	53	53	53
54	54	54	54	54	54	54	54	54	54
55	55	55	55	55	55	55	55	55	55

Computer Services

Resource utilization

- (i) The Division of Computer Application provided computing facilities to scientists/ research workers and students to work on various computers in different labs. A break up of the time utilized in various laboratories is as given:

Laboratories	No. of user's visits	Time utilized (hrs)
ARIS-Lab. (111A)	2772	13364
Bio-Informatics-Lab. (118)	459	2326
Divisional Scientist-Lab. (129)	971	3466
CAS Training-Lab. (130)	760	2951
Data Entry-Lab. (131)	446	2240
Total	5408	24347

(ii) Selective Dissemination of Information

Bio-informatics Centre provided services to scientists in NARS in terms of searching from the bibliographic databases. The scientists of the Institute were also provided services for colour output of certificates, cover pages and laser

outputs for various documents. It received 3 requests from other institutes of ICAR and output of 7230 abstracts were provided to them.

(iii) Special Assignments

- The Internet services have been provided to the users and website of IASRI has been regularly updated including the Hindi Version. So far 75, 170 users have visited the site.
- Support is also being provided for operation and maintenance of computer and related equipment and network services in the Institute.
- Management of the NATP and NISAGENET Cell.

(iv) Miscellaneous

- Designed and developed the website for TAAS (Trust for Advancement of Agricultural Sciences).