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RP

LIST OF RESEARCH PROJECTS

ICRISAT CENTER
ICRISAT SAHELIAN CENTER
SADCC REGIONAL PROGRAM



ICRISAT

International Crops Research Institute for the Semi-Arid Tropics
ICRISAT Patancheru P.O. Andhra Pradesh 502 324, India

February 1987

P R E F A C E

This is for the first time that ICRISAT Research Projects from Center and Regional programs are put into a single list due to the new thinking and coordination in ICRISAT's reorganisation.

The Center projects including those under the direct administrative control of Directors from Center are put under "IC". The projects from ICRISAT Sahelian Center and the ones in West Africa under "IS" and those in Southern Africa (SADCC program) under "SD".

The project numbers of IC start from 101 onwards; IS from 501 and that of SD from 801. The Crop abbreviations M for Millets, S for Sorghum, C for Chickpea, G for Groundnut are continued. However the PS (Farming Systems) and EC (Economics) project numbers are merged under "RM" (Resource Management). The Economics projects numbers under RM start from 301.

J.S. Kanvar
Dy Director General

February, 1987

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ICRISAT RESEARCH PROJECTS SUMMARY

CEREALS PROGRAM - MILLETS - ICRISAT CENTER

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
M-101(74)IC	International testing and cooperation	SBC/JRV SBK	Brd/ Pat	1990
M-102(85)IC	Population improvement and the breeding of varieties by recurrent selection	PS	Brd	1987
M-103(85)IC	Genetic diversification of elite breeding materials	KNR	Brd	1987
M-104(85)IC	Breeding of synthetics	SBC	Brd	1987
M-105(85)IC	Breeding of pollinators	BST	Brd	1987
M-106(85)IC	Breeding of male sterile lines	KNR	Brd	1987
M-107(85)IC	Breeding of hybrids	BST/KNR SBC/JRV	Brd	1989
M-108(85)IC	Computerisation of breeding documentation	JRV	Brd	1986
M-109(85)IC	Breeding for drought resistance	BST/ FRB	Brd/ Phy	1987
M-110(85)IC	Evaluation of specific characters and hypotheses relating to yield and yield stability	FRB/ KNR/ PS	Brd/ Phy	1987
M-111(85)IC	Selection indices for spaced plant selection	PDF	Brd/ Phy	1987
M-113(85)IC	Breeding for nigot resistance	BST/RPT SBC/PS	Brd/ Pat	1987

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
M-114(85)IC	Breeding for smut resistance	RPT/PS SBC/KNR BST	Brd/ Pat	1987
M-116(85)IC	Selection for nitrogenase activity trait in pearl millet	SPW/ SBC	Brd/ Mic	1987
M-117(85)IC	Breeding for protein content and quality	PS/VS	Brd/ BN	1987
M-119(85)IC	Control of flowering by photoperiod	FRB	Phy	1987
M-121(85)IC	Repeatability and applicability of drought nursery results (joint project with AICMIP)	VH	Phy	1988
M-122(85)IC	Identification and assessment of drought resistance	VH	Phy	1989
M-123(85)IC	Occurrence of drought stress in millet growing environments	VH	Phy	1988
M-124(85)IC	Downy mildew: Biology, epidemiology and resistance identification	SBK/ SDS	Pat	1987
M-125(85)IC	Ergot: Biology, epidemiology and resistance identification	RPT/ SBK	Pat	1987
M-126(85)IC	Smut: Biology, epidemiology and resistance identification	RPT	Pat	1987
M-127(85)IC	Rust: Biology, epidemiology and resistance identification	SBK/ SDS	Pat	1987
M-128(85)IC	Studies on pearl millet insects of potential economic importance	HCS	Ent	1987
M-129(85)IC	Quantification of nitrogen fixation associated with millet and sorghum in the SAT soils	KKL/ SPW	Mic	1988

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
M-130(85)IC	Nitrogen fixing bacteria associated with pearl millet and sorghum inoculation responses and study of factors affecting N ₂ -fixation	SPV/ KKL	Mic	1987
M-131(85)IC	Vesicular arbuscular mycorrhiza (VAM) development in pearl millet and sorghum in the SAT and the response to inoculation	KRK/ KKL	Mic	1988
M-132(85)IC	Evaluation of food quality characters and physicochemical properties of pearl millet.	VS	Brd/ BN	1987
M-133(86)IC	Joint experiments on selection and evaluation of genetic material in India and West Africa	JRW/ KNR/KAK S00/VS	Brd	1990
M-134(86)IC	Collaborative millet pathology research between ICRISAT Center and ICRISAT Sahelian Center	SBK/ SDS/ RPK/ JW	Pat	1988
M-135(86)IC	Improvement of pearl millet for better crop establishment	PS/LKF	Agr	1989

CEREALS PROGRAM - MILLETS - ICRISAT SAHELIAN CENTER

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
M 501(86)IS	Multilocal selection and Evaluation: Nurseries and Field Tests	KAK	Brd	1990
M 502(86)IS	Diversification and use of genetic variability	KAK	Brd	1990
M 503(86)IS	Population improvement for high yield and disease resistance	KAK/ SOO	Brd	1990
M 504(86)IS	Development of seed parents and hybrids	KAK	Brd	1990
M 505(86)IS	Study of photoperiod sensitivity of full-season millets.	SNL	Brd	1987
M 506(86)IS	Genetic base: Identification of parents, diversification and use in variety development	SNL	Brd	1987
M 507(86)IS	Population improvement: full season varieties (120-150 days)	SNL	Brd	1989
M 508(86)IS	Yield tests and exchange nurseries	SNL	Brd	1989
M 509(86)IS	Germlasm evaluation	SOO/ SAR	Brd	1990
M 510(86)IS	Breeding synthetics	SOO	Brd	1990
M 511(86)IS	Regional and International Cooperation	SOO/KAK SNL/JV KFN	Brd	1990
M 512(86)IS	Evaluation and intensification of millet production systems in the Sahelian zones	LKF	Agr	1986

Project	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
M 513(86)IS	Evaluation of intercropping systems based on millet as main cereal	LKP	Agr	1987
M 514(86)IS	Downy mildew screening techniques and resistance identification	JW	Pat	1988
M 515(86)IS	Smut and Ergot: screening techniques and resistance identification	JPV	Pat	1988
M 516(86)IS	Striga hermonthica: Biology, screening and resistance identification	JPV	Pat	1988

CEREALS PROGRAM - MILLETS - SADCC REGIONAL CENTER

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
M 801(86)SD	Improvement of pearl millet for grain yield and the desirable agronomic traits	SCG/ VAJdM	Brd	1991
M 802(86)SD	Improvement of finger millet for grain yield and food quality	SCG	Brd	1991
M 803(86)SD	Identification of major millet diseases and screening for disease resistance in the SADCC region	VAJdM	Pat	1988

CEREALS PROGRAM - SORGHUM - ICRISAT CENTER

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
S-101(74)IC	International testing and cooperation	SZM LKM JHP/KL	Brd/Pat Phy/Ent	1990
S-102(85)IC	Resistance to <u>Striga asiatica</u>	PKV/PS	Brd/Phy Pat	1990
S-103(85)IC	Sorghum improvement for multiple desirable traits by recurrent selection	BVSR	Brd	1990
S-104(85)IC	Development of improved female parents (A&B lines) with milo and other cytoplasm and their evaluation in hybrid production	DSM	Brd	1990
S-105(85)IC	Conversion of valuable tropical sorghums into desirable and readily usable types	PKV	Brd/ GR	1990
S-106(85)IC	Evaluation of food and nutritional qualities of Sorghum	DSM/VS	Brd/ BN	1988
S-107(85)IC	Factors affecting seedling emergence and survival from environmental stress	PS/ JHP/SS	Phy	1987
S-108(85)IC	Factors affecting plant survival from mid season stress	JHP/SS	Phy	1988
S-109(85)IC	Factors affecting plant survival from terminal stress	NS/SS	Phy	1988
S-110(85)IC	Biology and genetic control of sorghum grain molds	RB/ SZM/RJ	Pat/ Brd/BN	1990

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
S-111(85)IC	Biology and genetic control of sorghum anthracnose	SP	Pat/ Brd	1988
S-112(85)IC	Biology and genetic control of sorghum downy mildew	LKM	Pat/ Brd	1988
S-113(85)IC	Biology and epidemiology of sorghum root and stalk rot complex	SP	Pat	1988
S-114(85)IC	Biology of sorghum ergot	RB	Pat	1988
S-115(85)IC	Studies on the biology, ecology and control of sorghum midge and headbugs.	HCS	Ent	1988
S-116(85)IC	Studies on the population dynamics and economic thresholds for sorghum shootfly and stem borer	SLT	Ent	1988
S-117(85)IC	Identification and utilization of resistance to sorghum midge and headbug	HCS/ ALA	Ent	1990
S-118(85)IC	Identification and utilisation of resistance to sorghum stem borer and shootfly	SLT/ BIA	Ent Brd	1990
S-119(85)IC	Feeding behaviour of earhead bug, <i>Calocoris angustatus</i> Leth. and its effects on sorghum grain quality	PDF	Ent	1987
S-120(85)IC	Genetics of resistance to sorghum downy mildew.	NEB (Trg)	BRD/ Pat	1987
S-121(86)IC	Breeding sources for intermediate and lowland areas of Latin America	SLT	Brd	1986

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
S-122(86)IC	Evaluation of sorghum cultivars for adaptability, yield potential and pest resistance in highlands of Mexico	CLP	Agr	1991
S-123(86)IC	Study the existing and improved sorghum based cropping systems suitable for Mexican, Central american and Caribbean intermediate and lowland situations	CLP	Agr	1991
S-124(86)IC	Study of sorghum based cropping systems suitable for small farmers in Latin America	CLP	Agr	1991
S-125(86)IC	Sorghum breeding for intermediate and lowland areas of Eastern Africa	VG	Brd	1991
S-126(86)IC	Sorghum breeding for cold resistance for highlands of Eastern Africa	VG	Brd	1991
S-127(86)IC	Breeding Sorghum for highlands of Latin America	VG/LR	Brd	1986

CEREALS PROGRAM - SORGHUM - ICRISAT SAHELIAN CENTER

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
S 501(86)IS	Stable and high yielding early duration varieties for low rainfall regions of West Africa	KVR	Brd	1990
S 502(86)IS	Stable and high yielding medium duration varieties for intermediate rainfall regions of West Africa	KVR	Brd	1990
S 503(86)IS	Stable and high yielding medium to late maturing varieties for high rainfall regions of West Africa.	DSM	Brd	1990
S 504(86)IS	Development of stable and high yielding early maturing hybrids for West Africa	DSM	Brd	1990
S 505(86)IS	Screening for grain mold resistance	HDT	Pat	1990
S 506(86)IS	The biology of and identification of resistance to grey leaf spot and the epidemiology of the disease	HDT	Pat	1988
S 507(86)IS	The biology, epidemiology and identification of resistance to sooty stripe	HDT	Pat	1988
S 508(86)IS	Design and evaluation of improved sorghum based cropping systems and soil fertility management practices	SVRS	Agr/ Brd/ CS/ Ent	1989

CEREALS PROGRAM - SORGHUM - SADCC REGIONAL CENTER

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
S 801(86)SD	Improving sorghums for high and stable yields with wide adaptation	ATO/ VAJdM/ KL	Brd	1991
S 802(86)SD	Adaptation and evaluation of a series of introduced random mating populations towards developing few diverse and variable populations for the region	ATO	Brd	1990
S 803(86)SD	Screening/evaluating sorghum and millets for resistance to Striga	ATO/ VAJdM	Brd	1989
S 804(86)SD	Pathology and epidemiology of sorghum leaf blight	VAJdM	Pat	1988
S 805(86)SD	Identification of major sorghum diseases and screening for disease resistance in the SADCC region	VAJdM	Pat	1988

LEGUMES PROGRAM - PULSES (Pigeonpea) - ICRISAT CENTER

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
P-101(75)IC	International trials	DGF/MVR SSL	Brd/ Pat Ent	1988
P-102(85)IC	Development of short duration cultivars and superior breeding lines for grain production	SCG/ MVR/ SSL/ YSC	Brd/ Pat/ Agr/ Ent	1988
P-103(85)IC	Development of medium duration cultivars and superior breeding lines for grain production	KCJ/ MVR/ SSL	Brd/ Pat/ Ent	1988
P-104(85)IC	Development of long duration cultivars and breeding populations for grain production	HS/ MVR/ SSL	Brd/ Pat/ Ent	1989
P-105(85)IC	Development of hybrids and their seed production technology	KBS/ MVR	Brd/ Pat/ Ent	1988
P-106(85)IC	Breeding for special traits (new variability; high protein; vegetable types)	KBS/ PR/US	Brd/ BN/GR	1988
P-107(85)IC	Climatic adaptation in pigeonpea	YSC	Agr	1988
P-108(85)IC	The alleviation of drought and waterlogging effects on growth, symbiotic nitrogen fixation capacity and yield of pigeonpea.	YSC/ JVDKKR	Agr	1988
P-109(85)IC	Detection and evaluation of genetic variation in symbiotic nitrogen fixation in pigeonpea	JVDKKR	Agr	1988

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
P-110(85)IC	Studies on the pigeonpea podfly, <i>Melanagromyza obtusa</i> including investigations of the mechanisms of host plant resistance	SS	Ent/ BN	1988
P-111(85)IC	Study some of the factors affecting the grain quality of pigeonpea	US/KBS	BN/ Brd	1987
PULSES - CHICKPEA				
C-101(77)IC	International Trials for Dry Areas	KBS/HAvR MVR/SSL	Brd/Pat Phy/Ent	1990
C-102(85)IC	International trials for semi-arid tropics	HAvR/OS SCS/CLLG CLLG/JK	Brd/Pat Agr/Ent	1990
C-103(85)IC	Breeding short duration desi chickpeas for stability and high yield	OS/SCS MVR/SSL NPS	Brd/Pat Ent/Agr	1989
C-104(85)IC	Breeding long duration desi chickpeas for stability and high yield - International	JK/CLLG SSL/NPS MVR	Brd/Pat Ent/Agr	1989
C-105(85)IC	Breeding long duration desi chickpeas for stability and high yield. National : Pakistan, with emphasis on <i>Ascochyta</i> blight resistance	HAvR/ MSR/ MVR	Brd/ Pat/ Ent/ Agr/	1989
C-106(85)IC	Breeding kabuli chickpeas for stability and high yield in semi-arid tropics	SCC/JK MVR/SSL NPS	Brd/Pat Ent/Agr	1989
C-107(85)IC	Breeding kabuli chickpeas for stability and high yield in dry areas	KBS/MCS HAvR/MVR	Brd/Pat Phy	1990

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
C-108(85)IC	Breeding chickpeas for adaptation to early and late sowing, and to increased inputs	CLLG/OS MVR/NPS SS	Brd/Agr Pat/Ent	1989
C-109(85)IC	Studies on genetics and breeding methods of chickpea	OS/SCS CLLG/JK	Brd	1989
C-110(85)IC	Climatic adaptation in chickpea	NPS	Agr	1988
C-111(85)IC	The alleviation of drought effects on growth, symbiotic nitrogen fixation capacity and yield of chickpea	NPS/ OPR	Agr	1988
C-112(85)IC	Detection and evaluation of genetic variation in symbiotic nitrogen fixation in chickpea	OPR	Agr	1988
CP-113(85)IC	Identification of situations where chickpea and pigeonpea respond to Rhizobium inoculation	CJ/ JVDKKR/ OPR	Agr	1988
CP-114(85)IC	Maintenance, multiplication and distribution of rhizobial germplasm of chickpea and pigeonpea.	OPR/ JVDKKR	Agr	1988
CP-115(85)IC	Detection and alleviation of mineral nutrient deficiencies and soil chemical toxicities in chickpea and pigeonpea	CJ/NPS YSC/OPR JVDKKR	Agr	1988
CP-116(85)IC	Adaptation of chickpea and pigeonpea to low levels of available soil phosphorus and soil moisture	JA/ NA/ KO/ CJ	Agr	1990
CP-117(85)IC	Studies on the pathogens causing wilts and root rots of chickpea and pigeonpea	MPH	Pat	1990

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
CP-118(85)IC	Studies on the pathogens causing blights of pigeonpea and chickpea	YLN	Pat	1990
CP-119(85)IC	Studies on the viruses affecting pigeonpea and chickpea	AMC	Pat	1990
CP-120(85)IC	Screening for disease resistance in chickpea and pigeonpea	MVR/ DGP/ HAvR	Pat	1990
CP-123(85)IC	Studies leading to integrated pest management on pigeonpea and chickpea including the augmentation of natural control elements	SS	Ent	1989
CP-124(85)IC	Host plant resistance to insect pests in chickpea, pigeonpea and its relatives, screening and identification of mechanisms.	SSL	Ent	1988
C-125(85)IC	Grain quality improvement in chickpea	US/JK/ OS/SCS CLLG	BN/ Brd/C	1987
C-126(85)IC	Investigate host plant resistance in chickpea using chemical/biochemical methods	RJ	BN/ Pat/ C	1988
CP-127(85)IC	Adaptation of chickpea and pigeonpea to low levels of available soil phosphorus and soil moisture	JA/NA CJ	Agr	1990

LEGUMES PROGRAM - GROUNDNUT - ICRISAT CENTER

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
G-101(85)IC	Biology and management of foliar diseases of groundnut	PS/LJR VMR/AKS	Pat/Brd Phy/Cyt	1989
G-102(85)IC	The biology and management of aflatoxin contamination of groundnut	VKM/RCNR MJVR/PVA PVA/AKS	Pat/Brd Phy/Ent	1989
G-103(85)IC	Biology and management of groundnut diseases caused by soil fungi, bacteria and nematodes	VKM/MJVR RCNR/PVA VMR	Pat/Brd Phy/ent	1988
G-104(85)IC	Biology and management of groundnut diseases caused by viruses, prokaryotes and viroids	DVRJ/PVA AKS/LJR SLD	Pat/Ent Brd/Cyt	1990
G-105(85)IC	Adaptation to specific environments and requirements	SLD/MJVR VMR	Brd/Phy	1990
G-106(85)IC	Water stress effects on groundnut	RCNR/VKM VMR/PTCN KRK	Phy/Pat Ent	1990
G-107(85)IC	To investigate nutrient stresses and to exploit rhizobium and mycorrhizae to increase groundnut	KRK/ PTCN/ VMR/ MJVR/VKM	Phy/ Brd/ Pat	1990
G-108(85)IC	Exploitation of <u>Arachis</u> species for improvement of the cultivated groundnut	AKS/ DCS/ JPM	Cyt/ Brd/ Ent/Pat	1988

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
G-109(85)IC	Identification and utilisation of host plant resistance to insect pests and associated organisms.	PVA/ SLD/ AKS	Ent/ Brd	1987
G-110(85)IC	Biology and management of pests of stored groundnuts	KMD	Ent/ Pat/Brd	1987
G-111(85)IC	Integrated pest management with emphasis on Spodoptera litura and groundnut leaf minor (GNLM)	JAV/ GVRR	Ent	1987
G-112(86)IC	Termite control in groundnuts	JAV/ GVRR/PVA	Ent	1989
G-113(85)IC	Evaluation of Nutritional and food quality of groundnut	RJ/ SLD/AMO	BN/ BRD	1990
G-115(85)IC	Photoperiod effects in groundnut	MLF	Brd/ Phy	1987

LEGUMES PROGRAM - GROUNDNUTS - SADCC REGIONAL CENTER

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
G 801(86)SD	Ecology of vector and viruses of rosette disease	KRB	Pat	1987
G 802(86)SD	Screening for resistance to rosette disease	KRB	Pat	1987
G 803(86)SD	Screening for and research into resistance to early leaf spot	KRB	Pat	1987

RESOURCE MANAGEMENT PROGRAM - ICRISAT CENTER

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
RM-101(84)IC	Studies on crop-weather modeling of pearl millet	AKSH/ PS/ GA	CL	1987
RM-102(84)IC	Studies on crop-weather modeling of groundnut	AKSH/ RCNR	CL	1988
RM-103(84)IC	Water use - yield relationships of chickpea	PS	CL	1988
RM-104(84)IC	Characterisation of the moisture environment of SAT	SHV/MVKS PS/AKSH	CL	1988
RM-105(83)IC	Long term effects of cropping systems rotations on crop productivity and soil fertility in the assured rainfall areas	MN/ TJR/ KLS	CS/ SC	1989
RM-108(85)IC	Management of perennial weeds	MRR	VR	1987
RM-110(84)IC	Systematic designs for determining plant population/spacing responses in systems involving perennial and annual species.	MRR	CS	1987
RM-111(85)IC	Crop productivity and pattern of rainfall	CKO/ MN/ PS	CS/ CL	1988
RM-112(85)IC	Microclimatology of plant communities	CKO/MSR RJVDD/PS SDS	CS	1988
RM-113(85)IC	Rice based cropping systems	MSR/ MN/ SKS	CS	1990

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
RM-114(74)IC	Pest monitoring by light traps	CSP	CE	1987
RM-115(84)IC	Impact of improved farming systems on insects pests and their natural enemies and the management of the pest problems	CSP	CE/ OF	1990
RM-116(85)IC	Studies on <i>Heliothis armigera</i> migration using radar	JRR/ ABS/ VR	CE	1987
RM-117(85)IC	Evaluation of agroforestry systems and methodologies	RVDB	CS/ SC	1987
RM-118(84)IC	Long term experiments to determine potassium and phosphorus fertilization strategies for an Alfisol	TJR/ KLS	SC	1989
RM-120(82)IC	Turnover of organic matter in soil	KLS/ HM/ AS	SC	1987
RM-121(82)IC	Nutrient-water-soil-crop interactions in Vertisols and Alfisols	TJR/ KLS/SS CVH/JRB	SC	1987
RM-123(84)IC	Characterisation of chemical and biological properties of selected Vertisols and Alfisols	KLS	SC	1988
RM-124(85)IC	Design and development of farm equipment suited to small SAT farmers	RKB	FP	1988

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
RM-128(85)IC	Multilocation testing of improved bullock drawn implements	RKB/ DSR/ CS/NCS	PP	1990
RM-129(84)IC	Potential for sustained water resource, development and efficient use for supplemental irrigation	RCS	LW	1987
RM-130(85)IC	Evaluation of land management alternatives for shallow vertic soils	KLS/ MRR/ SS/RCS	LW/ CS/ SP	1990
RM-131(85)IC	Hydrologic modelling and simulation alternative approaches to runoff modeling for SAT soils	RCS/ KLS/PP	LW/ SP	1987
RM-132(84)IC	Quantifying inherent site characteristics for predicting and controlling soil erosion by water in the SAT	SS/PP	SP	1989
RM-133(84)IC	Optimized land management practices for Alfisols	PP	SP	1988
RM-134(84)IC	Simulated rainfall studies of alternative methods to reduce Alfisols surface sealing/crusting and enhance structural stability	SS/ NKA/ PP/ KLS/ CVH	SP/ PP/ SP	1988
RM-135(84)IC	Primary tillage intensity and soil structural modifications requirements for optimum productivity (Alfisols)	PP/ NFA/ SS/RCS	SP/ PP/ LW	1988
RM-136(85)IC	To determine the efficiency of different inter-terrace land treatments and evaluation of improved farm machinery in Vertisols in Akola (Gunj Watershed), Mah. St	KLS/ SS/RKB	OP/ LW/ SP/ FP	1987

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
RM-137(85)IC	Evaluation of land management and appropriate cropping systems for Vertisols in Bhopal region -Madhya Pradesh (Phanda Para watershed)	KLS/ DS	OP/ LV	1987
RM-138(85)IC	On-farm evaluation of improved implements and crop production and plant protection studies in Vertisols of Medak Dist. Andhra Pradesh (Chevella watershed)	SKD/ CSP/ PP/ RKB/CS	OP/ CE/ SP/ PP	1987
RM-140(85)IC	Assessment of atmospheric pollutants at ICRISAT Center and their implications for crop growth	KLS/ JAV/CKO JRB/PS	SC	1987
RM-141(86)IC	Behaviour of phosphorus in soils	KLS/ TJR	AGR/ SC	1991
RM-142(86)IC	Nitrogen management in drylands	SKD/VB JRB/KLS KLS/TJR	AGR/ SC	1990

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
RM-301(85)IC	Economics of prospective technologies	TSV	EC	1987
RM-302(85)IC	Credit markets, credit institutions, and differential access to credit in rural SAT India	NSJ	EC	1987
RM-303(85)IC	Role of common property resources in farming systems in SAT India	NSJ	EC	1987
RM-304(85)IC	Risk perceptions and risk management through new technologies and public sector policies	TSV/ NSJ	EC	1987
RM-308(85)IC	Late adoption of HYV cultivars and early acceptance of improved technologies.	TSV	EC	1987
RM-313(85)IC	Composite watershed management on Alfisol watersheds	RNA/ RDG/HvO	EC	1987
RM-314(85)IC	Agricultural investment, rural credit facilities and socioeconomic mobility	RPS	EC	1987
RM-315(85)IC	Studies of household economics	FCS	EC	1987
RM-317(85)IC	Assessing fertility in farmers' fields and evaluating component fertilizer practices in the SAT	KAD	EC	1987
RM-319(85)IC	Pest management decision rules	RAEM	EC	1987
RM-320(85)IC	Technology assessment system comprising microcomputer, standard application software, and representative farm models for major agroclimatic zones of SAT India	RAEM/ RPS	EC	1987

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
RM-321(85)IC	Compendium containing quantitative characterization and interpretation of farming systems in major agroclimatic zones of SAT India	RAEM/ RPS	EC	1987
RM-322(86)IC	Investigation of the correspondence between technology needs and environmental and structural characteristics of farm in the SAT of India	RPS/ NSJ	EC	1989
RM-323(86)IC	Microeconomic consequences of the diffusion of soybean in dryland agriculture in Madhya Pradesh	RCK/ RPS	EC	1987
RM-324(87)IC	Identification of quality characteristics of foodgrains and oilseeds suitable for market grading	RAEM/ RJ	EC/ BN	1989

RESOURCE MANAGEMENT PROGRAM - ICRISAT SAHELIAN CENTER

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
RM 501(86)IS	Climatic data collection and analysis for West Africa	MVKS	CL	1988
RM 502(86)IS	Characterisation of drought frequencies and drought probabilities in West Africa	MVKS	CL	1987
RM 503(86)IS	Definition of millet adaptation zones in West Africa	MVKS	CL	1988
RM 504(86)IS	Multilocation water balance studies in Niger	MVKS	CL	1988
RM 505(86)IS	Microclimatological studies in diverse cropping systems	MVKS	CL	1988
RM 506(86)IS	Measurement and prediction of actual evaporation from sparse dryland millet crop	JSV/ MVKS	CL	1987
RM 507(86)IS	Simulation of water balance and mapping of adaptation zones for groundnut in West Africa	FF/ MVKS/ CD	CL	1988
RM 508(86)IS	Combination of ridging, improved varieties of millet and cowpea, phosphorus on an operational scale	CR/ PGS/ MCK	CS	1989
RM 509(86)IS	Millet based cropping systems	CR/BN/ LKF/AT	CS	1989
RM 510(86)IS	Sources and management of nitrogen fertilizers	AB	SP	1988
RM 511(86)IS	Sources and management of phosphorus	AB	SP	1988
RM 512(86)IS	Relative efficiency and fate of sulfur fertilizers	AB	SP	1988

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
RM 513(86)IS	Evaluation of the role and usefulness of crop residue in stabilizing and increasing crop production	AB/MCK	AGE	1988
RM 514(86)IS	Effects of soil management practices on soil and water conservation	MCK	FP/ SP/ SC/ LM	1988
RM 515(86)IS	Effects of cultivation on physical and hydrological characteristics at Sadore soils	MCK	AGE	1987
RM 516(86)IS	Evaluation of factors influencing plant establishment	MCK	Agr/ AGE	1988
RM 517(86)IS	Development and adaptation of improved cowpea cultivars for millet based production systems in the Sahel	BN	CS	1988
RM 518(86)IS	Influence of windbreak on the growth and yield performance of millet and cowpea cultivars	AT/UB	CL	1988
RM 519(86)IS	Soil and/or sink limitation in millet cultivars	AT	CS	1990

GENETIC RESOURCES UNIT - ICRISAT CENTER

Project	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
GR-101(85)IC	Maintenance, evaluation, and documentation of sorghum germplasm.	KEPR	GR/ S	1989
GR-102(85)IC	Assembly of sorghum germplasm from other germplasm centers and collection within India	KEPR	GR/ S	1989
GR-103(85)IC	Introgression of useful genes from wild species and distantly related landraces of sorghum	KEPR/ KL	GR/ S	1989
GR-104(85)IC	Assembly, maintenance and evaluation of minor millets germplasm	KEPR	GR/ MM	1989
GR-105(85)IC	International cereal germplasm exploration and collection	MHM/ KEPR/SAR	GR/ S/M	1989
GR-106(85)IC	Pearl Millet germplasm, evaluation and maintenance	SAR	GR/ M	1987
GR-107(85)IC	Collection of pearl millet germplasm in India	SAR	GR/ M	1989
GR-108(85)IC	Evaluation of selected pearl millet germplasm under different environmental conditions in India and Africa.	MHM/ SAR	GR/ M	1987
GR-109(85)IC	Maintenance and evaluation of pigeonpea germplasm	PR	GR/ P	1989
GR-110(85)IC	Collection of germplasm of pigeonpea and related Cajaninae	PR	GR/ P	1989

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
GR-111(85)IC	Maintenance and evaluation of Cicer germplasm	RPSF	GR/ C	1989
GR-112(85)IC	Collection of Cicer germplasm	RPSF	GR/ C	1989
GR-113(85)IC	Maintenance of wild Cicer species and interspecific hybridization	RPSF	GR/ C	1989
GR-114(85)IC	Collection and assembly of <i>Atachia</i> Genetic Resources from National and International sources; classification and documentation	VRR	GR/ G	1989
GR-115(85)IC	Maintenance and evaluation of groundnut germplasm	VRR	GR/ G	1989
GR-116(85)IC	Multilocation evaluation of pigeonpea germplasm	PR	GR/ P	1987
GR-117(86)IC	Multilocation evaluation of chickpea germplasm	RPSF	GR/ C	1988

BIOCHEMISTRY AND NUTRITION - ICRISAT CENTER

Project Number	Title	Project Scientists	Disciplines/ Subprograms	Completion Date
BN-101(85)IC	Biological evaluation of advanced/pre-release cultivars developed by crop improvement programs	RJ	BN	1987

ICRISAT RESEARCH PROJECTS - INHOUSE REVIEW 1986 - SUMMARY

Program	IC	IS	SD	Total
Cereals				
Millet	31	16	3	50
Sorghum	27	8	5	40
Legumes				
Pulses	36	-	-	36
Groundnuts	14	-	3	17
RMP	48	19	-	67
GRU	17	-	-	17
BN	1	-	-	-
<hr/>				
Total	174	43	11	228

ICRISAT RESEARCH PROJECTS SUMMARY

List of terminated projects during 1985/86 (ICRISAT CENTER)

Project Number	Title and Proj. Scien.	Recommendation
LEGUMES PROGRAM		
CP-121(85)IC	Studies on the nematode diseases of pigeonpea and chickpea (YLN)	Terminated
CP-122(85)IC	Studies of Heliothis populations to support the pest management programs, and to rear Heliothis for experiments (VR/DRD)	Terminated
G-114(85)IC	Water stress effects on groundnut (SNAA)	Terminated
G-116(85)IC	Breeding for enhanced nitrogen fixation in groundnut - some preliminary investigations(MD)	Terminated
G-117(85)IC	Epidemiology of and screening for resistance to peanut clump disease; serological methods for diagnosis of Witches' broom disease (HAH)	Terminated
G-118(85)IC	To study genotypic variation in respect of groundnut pod and seed invasion by A. flavus and other fungi and aflatoxin contamination (SN)	Terminated
CEREALS PROGRAM - Millets		
M-112(85)IC	Breeding for downy mildew resistance(SBC/KNR/PS/SDS/BST)	Terminated
M-115(85)IC	Breeding for rust resistance (KNR/PS/SDS/BST)	Terminated

Project Number	Title and Proj. Scien.	Recommendation
M-118(85)IC	Improvement in crop establishment (PS)	Terminated
M-120(85)IC	Relationship of duration of the vegetative period and phenotype on pearl millet(PDF)	Terminated
RESOURCE MANAGEMENT PROGRAM		
RM-106(84)IC	Factors affecting crop-weed balance (MRR)	Terminated
RM-107(84)IC	Development of integrated weed management practices (MRR/RKB)	Terminated
RM-109(85)IC	Alternate agricultural land use systems (MRR/MN/PP/TJR/SS)	Terminated
RM-119(80)IC	Fate and efficiency of nitrogenous fertilizers in the SAT (CVH/ANO)	Terminated
RM-122(84)IC	Nutrient accumulation and redistributions (subproject within the interdisciplinary area:Alternative land use management systems) (TJR/KLS)	Terminated
RM-125(85)IC	Effect of fertilizer placement on germination, emergence and growth of plants in Vertisol and Alfisol (RKB/CVH)	Terminated
RM-126(85)IC	Development and testing of low and ultra low volume sprayers and a duster mainly for pigeonpea (TT/CSP/NKA/VCSS)	Terminated
RM-127(85)IC	Farm machinery design transfer to small industries for commercial production (RKB)	Terminated
RM-139(82)IC	Cooperative project on A Benchmark soils network for agrotechnology transfer (JCB/RDG/STG)	Terminated

Project Number	Title and Proj. Scien.	Recommendation
RM-305(85)IC	Ex ante analysis of the impact of new technologies from ICRISAT (MvO)	Terminated
RM-306(85)IC	Marketing of groundnuts (MvO/NVN)	Terminated
RM-307(85)IC	Markets for commercial inputs (seeds, fertilizer, pesticides) as a constraint to adoption (MvO/HV)	Terminated
RM-309(85)IC	Preparation of monograph on the village level studies in India (TSV)	Terminated
RM-310(85)IC	Technology food production family structure and population (TSV)	Terminated
RM-311(85)IC	Crop choice and irrigation decision rules for optimizing water harvesting and supplementary irrigation of upland crops (SP)	Terminated
RM-312(85)IC	Consequences of land fragmentation and prospects for consolidation in SAT India. (VB)	Terminated
RM-316(85)IC	Economic evaluation of technology and policy options through whole-farm household modeling (RDG)	Terminated
RM-318(85)IC	Economics of agroforestry systems in India's SAT (Trg)	Terminated

COOPERATIVE PROGRAM - CEREALS

Project No.	Title & Proj. Scientists	Recommendations
M-1(82)VAP ISC	Geroplasm evaluation (KAK)	Discontinued
M-2(82)VAP ISC	Utilisation of geroplasm to develop new plant types (KAK)	Discontinued
M-3(82)VAP ISC	Intra-population improvement (KAK)	Discontinued
M-4(82)VAP ISC	Development of parents for hybrids suited for W.A. (KAK)	Discontinued
M-5(82)VAP ISC	Regional and international cooperation (KAK)	Discontinued
M-16(83)VAP ISC	Development of methods for improvement of establishment capacity of millet (LKP)	Discontinued
M-1(77)VAP SN	Diversification of genetic base (SCG)	Concluded
M-2(81)VAP SN	Improvement of synthetics of 90 days adapted for rainfed conditions of Senegal (SCG)	Concluded
M-3(79)VAP SN	National yield trials (SCG)	Concluded
M-4(81)VAP SN	Breeding for disease and pest resistance (SCG)	Concluded
M-5(79)VAP SN	Development of male sterile lines and hybrids for local adaptability (SCG)	Concluded
M-6(78)VAP SN	Regional trials and nurseries (SCG)	Concluded
M-7(77)VAP SN	International trials and nurseries (SCG)	Concluded

Project No.	Title & Proj. Scientists	Recommendations
M-8(82)VAP SN	Development of agronomic practices for optimising yields of new varieties under rainfed conditions(SOG)	Concluded
M-1(79)VAP NE	Coord.reg trials and observation nurseries in Africa (KAK)	Concluded
M-2(79)VAP NE	Yield trials and observation nurseries (International, regional and national) (KAK)	Concluded
M-3(79)VAP NE	Development of gene-pools and composites (KAK)	Concluded
M-4(79)VAP NE	Dev of synthetics and hybrids through pedigree breeding (KAK)	Concluded
M-5(79)VAP NE	Breeding for Striga resistance (Collaborative research with K.V. Ramaiah) (KAK)	Concluded
M-1(78)VAP BF	International, regional and national yield trials (SNL)	Concluded
M-2(80)VAP BF	Population improvement of photoperiod sensitive late cycle (about 140 days) cultivars of Mossi Plateau (SNL)	Concluded
M-6(76)VAP BF	Observation of nurseries of of downy mildew, ergot and smut (SNL)	Concluded
M-7(76)VAP BF	Identifying agronomically superior lines with stable sources of resistance to downy mildew (SNL)	Concluded
M-8(84)VAP BF	Recurrent selection in experimental population RP 82/83/1004 to get a variety with desired degree of photoperiod sensitivity (SNL)	Concluded
M-9(84)VAP BF	Developing bristle headed early maturing variety (SNL)	Concluded

Project No.	Title & Proj. Scientists	Recommendations
M-10(84)VAP BF	Breeding for photoperiod sensitive and less sensitive millets from crosses (SNL)	Concluded
M-11(79)VAP BF	Screening pearl millet for resistance to <i>S. hermonthica</i> and international testing nurseries (KVR)	Discontinued
M-12(81)VAP BF	Breeding for <i>S. hermonthica</i> resistant pearl millet cultivars with high grain yield and acceptable food quality (KVR)	Discontinued
M-1.1(80)VAP NG	Yield testing-T1: International yield trials (the hybrid trial) (S00)	Concluded
M-1.2(80)VAP NG	Yield testing-T2: Regional yield trials (S00)	Concluded
M-1.3(80)VAP NG	Yield testing-T3: Joint ICRISAT/National program, multilocation yield trials(S00)	Concluded
M-2.1(80)VAP NG	Genetic improvement - G11: Local germplasm per se (S00)	Concluded
M-2.2(80)VAP NG	Genetic improvement - G12: conversion of local germplasm (S00)	Concluded
M-2.3(80)VAP NG	Genetic improvement - G13: imported/exotic germplasm per se (S00)	Concluded
M-3.1(80)VAP NG	Observation nurseries - ON1: Program breeding nurseries and crossing blocks (S00)	Concluded
M-3.2(80)VAP NG	Observation nurseries - ON2: Regional entry progeny screening and selection (S00)	Concluded
M-3.3(80)VAP NG	Observation nurseries- ON3: Screening of promising genetic materials under disease sick plots (S00)	Concluded

Project No.	Title & Proj. Scientists	Recommendations
M-1(77)VAP SD	Final yield evaluation of national, regional, and international trials (RPJ)	Concluded
M-2(81)VAP SD	Development of new inbreds and synthetics for early (80-85 days) and late (110-130 days) maturity with high yield potential (RPJ)	Concluded
M-3(78)VAP SD	Study of combining ability of ms Ex Bornu and ms 81 (RPJ)	Concluded
M-4(78)VAP SD	Development of improvement of early, mid-late and bristled populations (RPJ)	Concluded
M-5(77)VAP SD	Maintenance and evaluation of germplasm (RPJ)	Concluded
M-6(82)VAP SD	Screening for drought, lodging, disease and Striga hermonthica resistance (RPJ)	Concluded
S-1(75)VAP HV	Yield trials (CMP)	Discontinued
S-2(79)VAP HV	Breeding for high yielding photosensitive long cycle (130-140 days to maturity) cultivars with superior harvest index, seedling emergence and vigor (CMP)	Discontinued
S-3(79)VAP HV	Breeding for high yielding medium (about 120 days) varieties with acceptable grain quality and grain mold resistance (CMP)	Discontinued
S-4(83)VAP HV	Breeding for early (100 days) and medium (120 days) duration P1 hybrids for commercial cultivation (CMP)	Discontinued
S-5(75)VAP HV	International screening nurseries (CMP)	Discontinued

Project No.	Title & Proj. Scientists	Recommendations
S-6(79)VAP HV	International Sorghum Striga observation nursery (KVR)	Discontinued
S-9(81)VAP EV	Breeding for Striga hermonthica resistant pearl millet cultivars with high grain yield and acceptable grain quality (KVR)	Discontinued
S-7(80)VAP HV	Development of sorghum varieties with resistance to Striga hermonthica higher yield and acceptable grain quality (KVR)	Discontinued
S-8(79)VAP HV	International Pearl Millet Striga observation nursery (ZGR)	Discontinued
S-8(82)VAP HV	Agronomic management of Striga problem (KVR)	Discontinued
S-1(79) VAP ML	Breeding sorghum varieties with adaptation to Malian field conditions and food systems population breeding (JFS)	Discontinued/ revise
S-2(79)VAP ML	Identification of useful breeding material in the Malian sorghum collection (CON)	Discontinued
S-3(79)VAP ML	Breeding sorghum varieties with adaptation to Malian field conditions and food systems pedigree crosses (JFS)	Discontinued/ Revise
S-4(79)VAP ML	Breeding hybrid seed parents of sorghum with adaptation to Malian field conditions and food systems (JFS)	Discontinued
S-5(82)VAP ML	Development of an ideal sorghum plant type for Mali with certain Guineinse characteristics Post floral drought resistance and grain mold resistance (JFS)	Discontinued

Program/Discipline Abbreviations

Program/Discipline Name	Abbreviations
Agronomy	Agr
Biochemistry and Nutrition	BN
Breeding	Brd
Chickpea	C
Climatology	CL
Cropping Systems	CS
Cropping Systems Entomology	CE
Cytogenetics	Cyt
Economics	E
Entomology	Ent
Farm Power	FP
Farming Systems	FS
Genetic Resources	GR
Groundnut	G
Land and Water	LV
Microbiology	Mic
Millet	M
On-Farm Research	OF
Pathology	Pat
Physiology	Phy
Pigeonpea	P
Resource Management	RM
Soil Chemistry	SC
Soil Physics	SP
Sorghum	S
Training	Trg
Weed Research	WR

Scientist abbreviations

Initials	Name
AB	A. Battione
ABS	A.B.S. King
AKS	A.K. Singh
AKSR	A.K.S. Huda
AMC	A.M. Ghanekar
ANO	A.N. Othar
AS	A. Schmitt
AT	A. Takete
ATO	A.T. Obilana
B	
BLA	B.L. Agrawal
BN	B. N'tare
BST	B.S. Talukdar
BVSR	B.V.S. Reddy
C	
CD	C. Dancette
CJ	C. Johansen
CKO	C.K. Ong
CLLG	C.L.L. Gowda
CLP	C.L. Paul
CR	C. Renard
CS	C. Sriram (CRIDA)
CSP	C.S. Pavar
CVH	C.V. Hong
D	
DCS	D.C. Sastri
DGF	D.G. Faris
DRD	D.R. Dent (Trg)
DS	D. Sharma
DSM	D.S. Murty
DSR	D.S. Rajput(CIAE)
DVRR	D.V.R. Reddy
F	
FF	F. Forest
FRB	F.R. Bidinger
G	
GA	G. Alagaraswamy
GVRB	G.V. Ranga Rao

H

HAH	H.A. Hobbs (Trg)
HAvR	H.A. van Rheenen
HCS	H.C. Sharma
HM	H. Mantler
HS	H. Singh
HV	Hetty Verhagen (Trg)

J

JA	J. Arihara
JAV	J.A. Vightman
JB	J. Banzhaf
JCB	J.C. Bhattacharjee
JFV	J.F. Verder
JK	J. Kumar
JMP	J.M. Peacock
JPM	J.P. Moss
JRB	J.R. Burford
JRR	J.R. Riley
JRV	J.R. Vitcombe
JSV	J.S. Wallace
JVDKKR	J.V.D.K. Kumar Rao

K

KAD	K.A. Dvorak
KAK	K. Anand Kumar
KBS	K.B. Saxena
KBS	K.B. Singh
KCJ	K.C. Jain
KCS	K.C. Sharma
KEPR	K.E. Prasada Rao
KFN	K.F. Nvanze
KKL	K.K. Lee
KL	K. Leuschner
KLS	K.L. Sahrawat
KLS	K.L. Srivastava
KMD	K.M. Dick
KNR	K.N. Rai
KO	K. Okada
KRB	K.R. Bock
KRK	K.R. Krishna
KVR	K.V. Ramaiah

L

LJF	L.J. Reddy
LKF	L.K. Fussell
LKM	L.K. Mughogho
LM	L. Marchais
LP	L. Ramirez

M

MCK	M.C. Klaij
MCS	M.C. Saxena
MD	M. Dutta (Trg)
MDT	M.D. Thomas
MMH	M.H. Mengesha
MJVR	M.J.V. Rao
MLP	M.L. Flohr (Trg)
MN	M. Natarajan
MPH	M.P. Navare
MRR	M.R. Rao
MSR	M.S. Rahman
MSR	M.S. Reddy
MVKS	M.V.K. Sivakumar
MVR	M.V. Reddy
MvO	M. von Oppen

N

NA	N. Ae
NCS	N.C. Shrivastava (Indore)
NFB	N.P. Beninati
NKA	N.K. Avadhval
NPS	N.P. Saxena
NS	N. Seetharama
NSJ	N.S. Jodha
NVN	N.V. Narasimham

O

OPR	O.P. Rupela
OS	Onkar Singh

P

PDF	Post-Doc Fellow (PDF)
PGS	P.G. Setafini
PKV	P.K. Vaidya
PP	P. Pathak
PR	P. Remanandan
PS	Pheru Singh
PS	Piara Singh
PS	P. Soman
PS	P. Subramanyam
PTCN	P.T.C. Nambiar
PVA	P.W. Amin

R

RAEM	R.A.E. Mueller
RB	R. Bandyopadhyay
RCK	R.C. Kashive

RCNR	R.C.N. Rao
RCS	R.C. Sachan
RDG	R.D. Ghodake
RJ	R. Jambunathan
RJVDB	R.J. Van Den Beldt
RKB	R.K. Bansal
RNA	R.N. Athavale
RPS	R.P. Singh
RPSP	R.P.S. Pundir
RPT	R.P. Thakur

S

SAR	S. Appa Rao
SBC	S.B. Chavan
SBK	S.B. King
SCC	S.C. Sethi
SCG	S.C. Gupta
SCS	S.C. Sethi
SBS	S.D. Singh
SKD	S.K. Das (CRIDA)
SKS	S.K. Sharma
SLD	S.L. Dvivedi
SLT	S.L. Taneja
SMV	S.M. Virmani
SN	S. Nahdt (Trg)
SNAA	S.N. Azam Ali (Trg)
SNL	S.N. Lohani
SOO	S.O. Okiror
SP	Suresh Pandey
SPV	S.P. Vani
SS	Sardar Singh
SE	S. Sathanantham
SE	S. Sivaramakrishnan
SSL	S.S. La'reef
STG	S.T. Galkvad
SVRS	S.V.R. Shetty
SZH	S.Z. Mukuru

T

TJP	T.J. Rego
TW	T.G. Walker
TT	T. Takenega

U

U	U. Singh
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V

VB	V. Balasubramanian (CRIDA)
VCSS	V.C.S. Shastry
VG	V. Guiragossian
VKM	V.K. Mehan
VH	V. Mahalakshmi
VHR	V.H. Ramrao
VRR	V. Ramanatha Rao
VS	V. Subramanian

V

VAJdM	W.A.J. de Milliano
WR	W. Reed

Y

YLN	Y.L. Nene
YSC	Y.S. Chauhan

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