[Separate table] Recruitment of fixed-term research scientists

No.	Centers·Institutes	Research Division	Location	Research Title	Research Program *
N1	Hokkaido Agricultural Research Center, NARO (HARC/NARO)	Plant Nematology Group, Division of Agro-environmental Research	Sapporo, Hokkaido	Biological study and development of detection methods to eradicate the potato cyst nematode	(1) Biological study of pale potato cyst nematode, *Globodera pallida* , on potato in Japan (2) Development of efficient methods for a large-scale detection of potato cyst nematode Keywords: Seasonal occurrence, Control technology, Plant protection, Detection of potato cyst nematode from soil samples
N2	Tohoku Agricultural Research Center, NARO (TARC/NARO)	Field Crop Management Group, Division of Crop Production and Management Research	Morioka, Iwate	Development of low-cost integrated weed management systems for dry seeded rice culture	(1)Development of weed age prediction techniques and a decision support system for optimum herbicide application timing for dry seeded rice culture (2)Development of cost effective weeding techniques based on water management and herbicide applications Keywords: Low-cost, Water management, Optimum time weed control, Farm trial
N3	Tohoku Agricultural Research Center, NARO (TARC/NARO)	Forage Utilization Group, Division of Livestock and Forage Research	Morioka, Iwate	Advancement of the preservation and utilization technology of high nutrition and high protein self-sufficiency feed	(1) Development of the preservation technology that is suitable for whole crop or soft grain use of forage soybean (2) Evaluation of feed characteristics of the forage soybean silage (3) Elucidation of the effect of forage soybean sikage on the productivity of beef cattle Keywords: Self-sufficiency protein, Fermentative quality, Feed characteristics, Feeding demonstration
N4	Tohoku Agricultural Research Center, NARO (TARC/NARO)	Plant Protection Group, Division of Agro-Environment Research	Morioka, Iwate	Species identification and elucidation of biological charactors of pathogenic bacteria isolated from onion (*Allium cepa*)	(1) Species identification and definition of host range of pathogenic bacteria isolated from onion (*Allium cepa*) (2) Studies on the biological charactor of each pathogenic bacterium on the host plant (3) Studies on the mode of pathogenic bacteria transmission via insects Keywords：Plant bacteriology, Host-parasite interaction, Epidemic process
N5	Central Region Agricultural Research Center, NARO (CARC/NARO)	Hokuriku Farm Work Systems Group, Division of Lowland Farming	Joetsu, Niigata	Evaluation of improving the drainage performance by simplified mole drain installation in heavy clay fields	(1) Evaluation and interpretation of the effect of improving the drainage performance on the physical and chemical properties of the soil and crop productivity (2) Validation of the effect of improving of the drainage performance in the paddy fields and the promoting aimed at the popularization of the techniques Keywords: Soil science and plant nutrition, Heavy clayl, Cutting drain method, Supplementary drain, Validation and promotion of techniques
N6	Central Region Agricultural Research Center, NARO (CARC/NARO)	Barley and Soybean Breeding Group, Division of Crop Development	Joetsu, Niigata	Rapid construction of latest practical barley breeding system and elucidation for the barley quality fluctuation factors in farmers field	(1) Breeding of new barley cultivars through the construction of the rapid integration system of valuable alleles (2) Elucidation of the barley quality fluctuation factors in farmers field Keywords: "Yukimi Rokujyo" for barley flour and distilled liquor use, Waxy barley cultivar "Hokuriku-kawa 58", Health functional compositions of barley, Responding to social needs through barley

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N7	Central Region Agricultural Research Center, NARO (CARC/NARO)	Wildlife Damage Management Group, Division of Applied Entomology and Zoology	Tsukuba, Ibaraki	Verification of countermeasures against Japanese monkeys to prevent and reduce crop damage and development of decision-support systems for the introduction and continuation of management procedures	(1) Analysis of the effectiveness of procedures, such as driving, habitat modification and fencing, used by farmers to prevent damages caused by Japanese monkey (2) Setting up guidelines to improve the effectiveness of countermeasures against monkeys for the communities with management experiences (3) Investigation of problems and solutions concerning introduction and continuation of the countermeasures (4) Setting up check sheet(s) to support decision-making and introduction of the countermeasure for the communities with no experience of monkey management Keywords: Wildlife damage management, Japanese monkey, Animal ecology, Farm work, Rural planning
N8	Western Region Agricultural Research Center, NARO (WARC/NARO)	Farm Mechanization and Information Systems Group, Division of Farming Systems Research	Fukuyama, Hiroshima	Development of labor-saving farm work technologies by utilizing advanced control technique for hilly and semi-mountainous areas	(1) Development of labor-saving direct seeding technologies for stable emergence and establishment of paddy (2) Development of labor-saving farm work technologies of cultivation for wheat and soybeans by utilizing advanced control technique (3) Effective utilization and labor-saving management of levee by utilizing power generation and robot technologies Keyword: Hilly and semi-mountainous areas, Advanced control technique, Direct seeding of paddy, Levee management, Robot technologies
N9	Western Region Agricultural Research Center, NARO (WARC/NARO)	Soil Management Group, Division of Agro-Environment Research	Fukuyama, Hiroshima	Development of the technology for low-input and stable production to introduce vegetables into paddy fields in hilly and semi-mountainous areas	(1) Clarification of the relationship between dynamics of water and nutrients in soil and tillage methods for avoiding wet damage in converted paddy fields (2) Development of the method to estimate available amount of accdumulated water and nutrient resources in hilly and semi-mountainous areas Keywords: Paddy field in hilly and semi-mountainous areas, Tillage method, Accumulated water and nutrient resources
N10	Western Region Agricultural Research Center, NARO (WARC/NARO)	Farm Management Group, Division of Farming Systems Research	Fukuyama, Hiroshima	Development of highly profitable diversified farming model in hilly and semi-mountainous areas	(1) Clarification of conditions for high profitable farming by diversification or integration for community-based group farming in hilly and semi-mountainous areas (2) Building of mathematical programming to assess diversified farming (3) Development of highly profitable diversified farming model which adapt the geographical and social conditions in hilly and semi-mountainous areas Keywords: Hilly and semi-mountainous area, Community-based group farming, Diversified farming, Mathematical programming, Highly profitable farming

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No.	Centers・Institutes	Research Division	Location	Research Title	Research Program *
N11	Western Region Agricultural Research Center, NARO (WARC/NARO)	Japanese Black Cattle Production and Wildlife Management Research	Ota, Shimane	Development of advanced grazing management techniques through the use of ICT	(1) Development of grassland monitoring technologies by vegetation discrimination and yield estimation of grassland using satellite and UAV (2) Development of remote monitoring technology of grazing facilities and grazing cattle by utilize the IC tag (3) Construction of grazing management support system by AI utilization Keywords: Satellite monitoring, UAV, AI, ICT, Pasture management, Grazing management
N12	Kyushu Okinawa Agricultural Research Center, NARO (KARC/NARO)	Insect Pest Management Group, Division of Agro-Environment Research	Koshi, Kumamoto	Development of a damage prevention method to the brown planthopper (BPH) on rice based on understanding of varied host suitability for BPH among rice cultivars from physiological and genetic perspectives	(1) Clarification of physiological and genetic backgrounds of rice underlying a high reproduction of BPH on rice cultivars (2) Clarification of the relationship between physiological status of rice and reproductive rate of BPH at molecular level, and development of cropping strategy to prevent feeding injury of BPH Keywords: Rice, Planthopper, Insect-plant interaction, Molecular marker, Integrated pest management (IPM)
N13	Kyushu Okinawa Agricultural Research Center, NARO (KARC/NARO)	Greenhouse Vegetable Production Group, Division of Horticulture Research	Kurume, Fukuoka	Analysis of physiologcal mechanism for low cost, high yield, high quality and high value- added production of vegetables in closed-type plant factory	(1) Analysis of physiological mechanism in environmental responses including photosynhesis, morphogenesis and secondary metabolism for leaf vegetables such as leaf lettuce under artificial lighting (2) Investigation of environmental conditions including light and temperature for low cost, high yield, high quality and high value- added production in closed-type plant factory Keywords: LED lighting, Plant physiology, Environmental response, Analysis of fuctional components for human health
N14	Kyushu Okinawa Agricultural Research Center, NARO (KARC/NARO)	Lowland Work System Group, Division of Lowland Farming Research	Chikugo, Fukuoka	Research on the crop monitoring and image processing technologies for crop cultivations and cultivation environments in field crops	(1) Development of monitoring technology of crop cultivation and cultivation environment by using the information and communication technology (ICT)-based support systems, including multicopter (2) Development of ICT for the automation of the cultivation management in field crops, such as rice, wheat, and soybeans Keyword: Field crops, Multicopter, Image analyses, Automatic control
N15	Institute of Fruit Tree and Tea Science, NARO	Pest Management Unit, Division of Grape and Persimmon Research	Higashihiroshima, Hiroshima	Unravel of disease-resistance mechanisms in grapevine cultivar, 'Shine Muscat'	(1) Exploration of the genes related to disease resistance in grapevine cultivar, 'Shine Muscat' (2) Exploration of the disease-resistance genes found in 'Shine Muscat' in other grapevine cultivars Keywords: Grape (table grape), Disease resistance, Downy mildew, Ripe rot

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No.	Centers・Institutes	Research Division	Location	Research Title	Research Program *
N16	Institute of Fruit Tree and Tea Science, NARO	Tea Pest Management Unit, Division of Tea Research	Shimada, Shizuoka	Research and development of new integrated tea pest management system for export tea production	(1) Biology, ecology, and management of new tea pest actualized by transition of management system (2) Research and development of biological or physical control method of serious tea pest (3) Research and development of tea pest management technology that can correspond to export counterpart's tolerance of pesticide residue Keywords: Population dynamics, Molecular ecology, IPM, MRL, Japanese tea export
N17	Institute of Vegetable and Floriculture Science, NARO	Quality and Function Research Unit, Division of Vegetable Pest Management and Functional Analysis	Tsu, Mie	Evaluation of nutrition and function of agricultural products and expansion of the database for functional ingredients	(1) Quantification of the functional ingredients of vegetables such as lutein and lycopene and development of high-precision test and simple measurement method for stabilization technology (2) Search of new functional vegetables or functional ingredients from Solanaceae or cruciferous vegetables Keywords: Componential analysis, Cell test, Animal experiment, Cultivation environment
N18	National Institute of Animal Health, NARO	Theriogenology Unit, Division of Pathology and Pathophysiology	Tsukuba, Ibaraki	Development of the accurate individual cattle management system for improvement of reproductive performance	(1) Variability analysis of sensing data from novel wearable wireless sensors during the estrous cycle (2) Development of the protocol for optimizing the timing of artificial insemination by prediction of ovulation time based on the sensing data (3) Establishment of an efficient reproductive management system using artificial intelligence Keywords: Reduced concenption rate, Wearable wireless sensor, Artificial intelligence, Reproductive management system
N19	Institute for Rural Engineering, NARO	Coastal Hydraulics Engineering Unit, Division of Hydraulic Engineering	Tsukuba, Ibaraki	Development of technologies for management and operation of drainage pump station to prevent/reduce flooding damage in agricultural areas by employng artificial intelligence	(1) Development of support system to optimise operation of drainage pump based on machine learning with data related to actual operation (2) Development of method to suggest prelimal drainage under predicted heavy rain by combining reginal drainage model and pump operation model Keywords: Exceedance probability rain, Big data, Lowland, Flood control
N20	Institute for Rural Engineering, NARO	Advanced Paddy Field Management Unit, Division of Agricultural Environment Engineering	Tsukuba, Ibaraki	Development of agricultural land consolidation technologies for laborsaving in farming and maintenance of agricultural land in hilly and mountainous rural areas	(1) Analyses for optimum formation of agricultural lands in hilly and mountainous rural areas to employ unmanned tiller (2) Analyses for optimum formation of ridge and levee surrounding farmland in hilly and mountainous rural areas to employ mowing machine (3) Development of low-cost technologies to construct agricultural lands for laborsaving agriculture (4) Affect estimation of fence for wild animals damage prevention on machinery farming Keywords: Information and communication technology (ICT), Farmland consolidation, Land use planning, Farmland Intermediary Management Institutions

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* Research project of the NARO can be refered to the following site:

http://www.naro.affrc.go.jp/english/research-programs/4th-midterm-plan.html