

— REPRINT ARTICLE —

## Research of Agricultural Lore and Phenology for Promoting the Ability of Environment Observation: Essential Attitude for Developing Climate-Adapted Cultivation System in Organic Agriculture

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### **Abstract**

Insight into environmental changes is necessary for developing climate-adapted cultivation system in organic agriculture. To offer useful meteorological information for promoting such ability, agricultural lores (AGLs), which were traditionally handed down by Japanese people, were selected and compared with recent meteorological data. One hundred and eighty-two of AGLs, which have been recorded in the Showa period in Japan, were categorized according to prefectures, crops, agricultural operations, and varieties of indexes. These AGLs were dispersed across the country, most of AGLs were indexes of cereals mainly involving rice, and more than half of AGLs in each crops were indexes of seeding and planting operations. AGLs of flowers, birds, and trees accounted for 67.7% of whole AGLs. Blooms of cherry, Kobushi magnolia, and Japanese wisteria accounted for 46.9% in AGLs of flowers. These AGLs were indexes for planting operations of rice, sweet potato, hemp, eggplant, soybean, Japanese barnyard millet, foxtail millet, and cotton. First calls of common cuckoo, oriental cuckoo, and lesser cuckoo accounted for 58.5% in AGLs of birds. These AGLs were indexes for planting operation of soybean, foxtail millet, rice, Japanese barnyard millet, proso millet, adzuki bean, and hemp, and for harvesting operation of tea and wheat. Leaf etiolation of ginkgo and young leaf size of persimmon accounted for 26.3% in AGLs of trees. AGLs of ginkgo and persimmon were indexes for planting operation of wheat and for planting operation of soybean and edible burdock, respectively. The range of daily minimum temperature and the normal values of last frost observation day and phenology observation day were calculated from the data for 59 years of 10 meteorological observatories in Japan. Analysis of daily minimum temperature for 30 days before and after the observation of two phenology, bloom of Japanese wisteria and first call of common cuckoo, indicated that the risk of frost damage were relatively high in the period before the observation days of these phenology. The normal values of these phenology observation day were later than those of the last frost observation day in all meteorological observatories, and moreover annual comparison of these observation days showed that the index of first call of common cuckoo was more effective to avoid final frost damage in spring season.

### **Key words**

agricultural lore (AGL), phenology, Japanese wisteria, common cuckoo, frost