平成２９年度　環境科学院　修士論文内容の要旨

Characteristics of new asparagus cultivars suitable for outdoor cultivation in Hokkaido, Japan

（北海道の露地栽培に適するアスパラガス新品種の特性評価）

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For selection of suitable cultivars in outdoor production in Hokkaido, biomass production and spear productivity of plants in new cultivars were investigated comparing with the present cultivars for 3 years. The nurseries of 3 present cultivars ('UC-157', 'Grande' and 'Gijnlim') and 3 new cultivars ('Vegalim', 'Atticus' and 'Cumulus') were planted in the Experimental Farm in Hokkaido university on July 2, 2014. Growth index of above ground was measured to evaluate the biomass production on Oct 11, 2015 and Nov 4, 2016. Fresh and dry weight of above ground biomass (AGB) were measured on Nov 1, 2015 and Dec 4, 2016. Green spears, 24 cm in length, were harvested for 4 weeks in 2016 and 6 weeks in 2017. Moreover, spears quality including spear top tightness and color was evaluated, 2016 and 2017. photon flux density and AGB including leaves and stems by 4 layers, 0.5m in each height, from ground surface to 2m height were measured in 4 years old plants to analyze canopy structure, 2017.

New cultivars tended to produce large spears, lager marketable and total yield and higher marketable ratio in new cultivars were obtained compared with present cultivars. The harvest peak showed 2nd week in all cultivars, especially higher in 'Atticus'. However, the variation of weekly yield was large compared with 'UC-157'. In spear top tightness, new cultivars 'Vegalim' was almost at the same level as the present cultivars 'UC-157' and 'Grande'. The scale leaves color of new cultivars had weak in anthocyanin coloring. Meanwhile, new cultivar 'Atticus' was more yellow than other cultivars. Therefore it was reasonable to assume that 'Atticus' and 'Vegalim' were recognized as promising cultivars from the view point of spear production and spear shape respectively.

The relationship between AGB (fern DW) and spear yield was not uncertain. The spear yield was relatively large in spite of small fern DW in 'Atticus'. There were significant differences in canopy structure among used cultivars. The frequency of photon flux density that reach to middle part, 1-1.5m from surface, was higher and photosynthesis was more activated in middle part in 'Atticus' compared with other cultivars. Besides, higher brix content, more than 30%, in underground rootstocks were measured in spite of small rootstocks in 'Atticus'. And then the relationship between underground biomass production (rootstock DW and brix) and spear yield in 2018 will also be evaluated to clarify the phenomenon.