Siriwan Boonanunt 2014: Selection Index for Drought Tolerant Trait in Peach Master of Science (Agriculture), Major Field: Horticulture, Department of Horticulture. Thesis advisor: Associate Professor Krisana Krisanapook, D.Agr. 87 pages.

Peach growing in rainfed area on the highland of northern Thailand has been encountered with drought environment which became more severe every year. To alleviate this problem, it could be achieved by using suitable drought tolerant rootstocks. This study aimed to find some parameters for selecting drought-tolerant peach rootstocks. The local peach variety 'Red Angkhang' and 3 new hybrid cultivars 42047T1, 43060T1 and 43087T2 were used in this study. Two-year-old peach seedlings of each cultivar were grown in 15-inch diameter pots and divided into 2 groups. The first group consisted of well watered plants (100% of evapotranspiration) and the second group contained insufficiently watered plants which received only 30% of evapotranspiration for 5 weeks. After that, insufficiently watered plants seedlings were re-watered in the same manner as the well watered plants for 2 weeks. The degree of drought tolerance of peach seedlings in this study could be separated into 2 groups. The first group had better tolerance under water deficit and consisted of 'Red Angkhang', which increased its root dry weight and 42047T1, which increased its root dry weight and also accumulated the highest amount of sorbitol. The second group consisted of 43060T1 and 43087T2 in which the root dry weight decreased and there was no sorbitol accumulation. Compared with the local cultivar 'Red Angkhang' the new hybrid 42047T1 appeared to have better potential for drought tolerance than the other new hybrids 43060T1 and '43087 T2. We also suggest that the root dry weight and the sorbitol concentration can be used for screening drought tolerant peach rootstock in northern Thailand.

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