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INTEGRATION OF CHLOROPLAST STARCH METABOLISM WITH HORMONAL REGULATION OF PLANT GROWTH

PAPARELLI E.*, PARLANTI S.*, GONZALI S.*, NOVI G.*, MARIOTTI L.**,
VAN DONGEN J.T.***, PERATA P.*

*) PlantLab, Istitute of Life Science, Scuola Superiore Sant'Anna, Piazza Martiri della Libertá 33, 56127 Pisa (Italy)
**) Department of Crop Plant Biology, University of Pisa, Via Mariscoglio 34, 56124 Pisa (Italy)
***) Max Planck Institute of Molecular Plant Physiology, Energy Metabolism Research Group, Potsdam-Golm (Germany)

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Mutants showing altered starch synthesis or degradation are smaller than the wild-type. This is usually explained as a direct consequence of diminished carbohydrate availability during the night phase. This work will show evidences suggesting that plant size in starch mutants results from reduced gibberellin synthesis. We show that kaurene synthesis (the precursor of gibberellins) in the chloroplast is regulated by a day/night cycle and starch mutants such as *pgm* and *sex1* loose the day peak of kaurene synthase expression. Reduced kaurene content were found at the end of the day in *pgm* and *sex1*. Exogenous gibberellin application reverts the dwarf phenotype in starch-defective mutants. These results suggest that plant growth is regulated so that it does not exceed the availability of carbohydrates by an integration of starch metabolism with hormonal-driven growth.