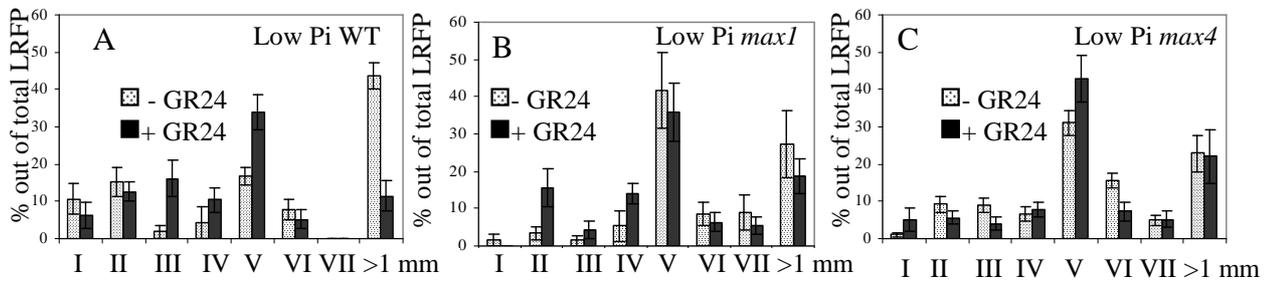
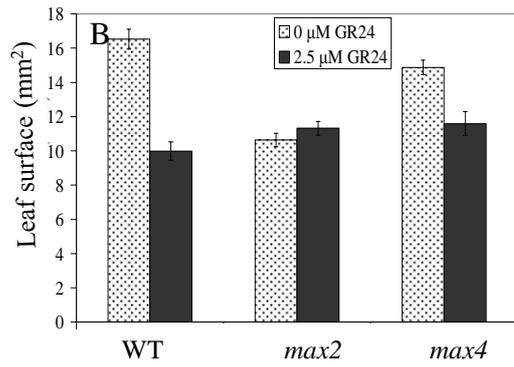


**Figure S1.** Application of GR24 affects cortical root cell dynamics of the proliferation and transition zone in a concentration dependent way.

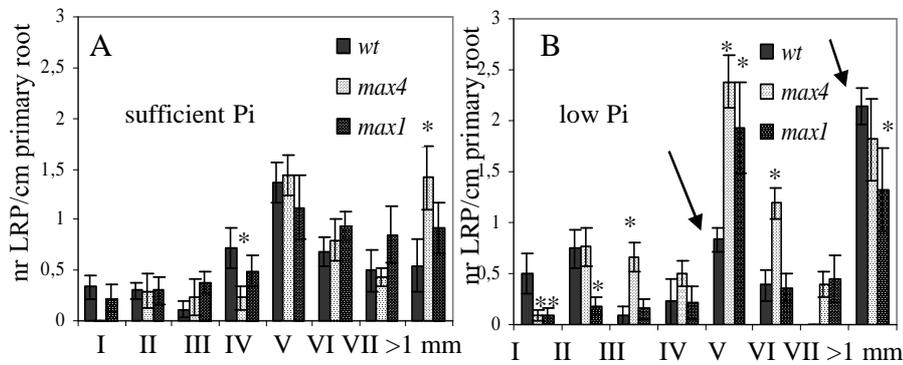
A-C, Cumulative root cortical cell length as a response to different concentrations of GR24 as measured in one cell file starting from the 10th cell above the quiescent centre plotted against the cell number. Lines represent the values of individual 7 day old Arabidopsis wild type plants. The linear, left part of the curves, reflects the meristematic zone in which cells have a relatively constant length. The change in the slope is indicative for the transition from meristematic to elongation zone. D, Primary root images (confocal microscopy) of propidium iodide stained, untreated and 2.5 resp. 10 μM GR24 treated 7 day old plants. EZ=elongation zone, TZ= transition zone, MZ= meristem zone, RC= columella root cap as observed for the untreated plant. Arrows indicate the approximate start of the transition zones. E, GR24 induced root curvature in 6 day old Arabidopsis seedlings grown on 1x MS plates in the presence of 5 μM GR24. F, Confocal microscopy image of the tip of a curved primary root.



**Figure S2.** The inhibitory effect of GR24 application on LRP development is decreased in plants grown under phosphate limiting conditions. Wild type (WT) (A), *max1-1* (B) and *max4-1* (C). Plants were pre-grown on vertical MS plates containing sufficient levels (1.5 mM) of Pi. After 5 days, plants were transferred to Pi limiting (20  $\mu$ M) MS plates supplemented with or without 2.5  $\mu$ M GR24. When plants were 12 days old, LR developmental stages were characterised according to the scheme of Malamy and Benfey (1997). The y-axis represents the % of each developmental stage out of the total LRP. Data are means  $\pm$  SE (n= 15-20).



**Figure S3.** GR24 treatment results in a decrease in leaf surface. Leaf surface was decreased by GR24 application in a *MAX2* dependent way. Data are means  $\pm$  SE (n=50-75).



**Figure S4.** The effect of endogenous strigolactones on lateral root development in Pi sufficient (A) and Pi limiting conditions (B). A-B, Density (LRP per cm primary root) for each category of LRP developmental stage, characterised according to the classification scheme of Malamy and Benfey (1997), of 12 day old wild type (wt), *max1-1* and *max4-1* plants carrying the *DR5-GUS* transgene. Plants were pre-grown for 5 days on vertical MS plates containing sufficient Pi levels (1.5 mM) after which all plants were transferred to either Pi deficient (20  $\mu$ M Pi) or Pi sufficient MS plates. Arrows indicate the decrease in LRP V and the increase in LR density which is specific for wild type plants. Data are means  $\pm$  SE (n=15-20). Asterisks indicate significant ( $P < 0.05$ ) differences between *max* mutant and wild type plants as determined by Student's t-test.