

Table 1. *NADPH and ATP yields depending on where photons are absorbed and which pathway is used*

Due to the uncertainty in the H⁺/ATP required in chloroplasts, two alternative options are given. Both photosystems are assumed to operate with 100% efficiency.

Path	PSII Photons	PSI Photons	NADPH	H ⁺	cATP ^a 4 H ⁺ /ATP	cATP ^a 4.67 H ⁺ /ATP	mATP ^b
Linear electron flow	2	2	1	6	1.5	1.28	
Cyclic electron flow, NDH ^c		2		8	2	1.71	
Cyclic electron flow pathways 2 to 4 ^d		2		4	1	0.86	
WWC	2	2		6	1.5	1.28	
Malate valve	2	2		6	1.5	1.28	2.5
Plastoquinol oxidase	2			2	1	0.86	

^aChloroplast production of ATP. Structural evidence favors 4.67 H⁺/ATP. ^bMitochondrial production of ATP or one cytosolic NADH per NADPH equivalent exported from the chloroplast via malate and returned as oxaloacetate. ^cAssuming a proton-pumping NDH. ^dFQR, type 2 NADH:PQ oxidoreductase, cytochrome *b₆f*, and Fd NADP reductase (see paths 2, 3, and 4 in Fig. 3).