(1)Cellulose biosynthesis is (2) vital biochemical process in (3) higher plants. This process is essential not only to (4) cell growth, (5) division, and (6) differentiation, but also to (7) tissue formation as (8) whole. Owing to its vital function, (9) cellulose biosynthesis can be (10) target of (11) specific inhibitors that can be used as (12) herbicides (Sabba and Vaughn 1999). However, (13) action of (14) available drugs remains largely unknown, and (15) existence of (16) direct interaction with (17) cellulose synthase machinery is not demonstrated in (18) majority of (19) cases.

(20)Dichlorbenzonitrile is (21) typical example of (22) herbicide affecting (23) cellulose biosynthesis in (24) indirect way. Although this drug has been used for (25) decades to inhibit (26) growth of (27) undesirable weeds in (28) shrub beds, (29) orchards, and (30) berry fields, (31) principle of its action through (32) microtubule-associated protein has been established only recently (Rajangam et al. 2008). (33) Most herbicides targeted to (34) cellulose biosynthesis have in (35) fact been isolated empirically, e.g., by screening (36) libraries of (37) molecules for their effect on (38) plant growth, rather than through (39) rational design.

(40) Process of (41) cellulose biosynthesis remains to be fully understood, despite (42) decades of (43) efforts that have been made to decipher (44) corresponding molecular events. (45) number of (46) hypothetical models have been proposed through (47) years to explain (48) polymerization and (49) crystallization mechanisms of (50) cellulose in (51) higher plants (Delmer, 1999; Brown and Saxena 2000; Doblin et al. 2002). Even though these models have been useful in raising (52) important fundamental questions and suggesting (53) possible answers, their hypothetical nature continues to be unclear. In this review article, we aim to generalize (54) previously demonstrated aspects related to (55) cellulose biosynthesis and revisit (56) number of (57) arguable concepts that are generally accepted a prioriwhile not being supported by (58) unequivocal experimental evidence.