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Table 8.1 summarises the modifications made to the soybean plant to produce LibertyLink® soybean.

### Table 8.1

| name of introduced gene | gene donor organism                   | gene product                                 | function of gene product                 |
|-------------------------|---------------------------------------|----------------------------------------------|------------------------------------------|
| <i>pat</i>              | <i>Streptomyces viridochromogenes</i> | phosphinothricin <i>N</i> -acetyltransferase | stops action of glufosinate, a herbicide |

**(a)** Explain how the modification made to produce LibertyLink® soybean may help to solve the global demand for food.

..... [4]

**(b) (i)** Name the type of enzyme that could be used to cut out the *pat* gene from *S. viridochromogenes*.

..... [1]

(ii) Name the enzyme that could be used to join the *pat* gene to a plasmid by forming phosphodiester bonds.

..... [1]

**(c)** Suggest reasons why LibertyLink® soybean is used in food products in 21 countries but only grown in 6 countries.

[3]