Figure 19-1: Production possibility frontier

(a) U.S. Production Possibility Frontier

(b) Colombian Production Possibility Frontier

(c) Joint Production Possibility Frontier

Images by MIT OpenCourseWare.
Figure 19-2: Gains from trade

(a) U.S. Production and Consumption

(b) Colombian Production and Consumption

Images by MIT OpenCourseWare.
Figure 19-3: Producer and consumer surplus in autarchy

Price of roses (per box)

Consumer surplus

Producer surplus

Domestic supply

Domestic demand

Quantity of roses (boxes)

Image by MIT OpenCourseWare.
Figure 19-4: Rose market with imports

The diagram illustrates a market for roses with domestic and world supply and demand curves. The autarky price $P_A$ is determined at point A, where the domestic supply and demand curves intersect. The world price $P_W$ is lower, as indicated by the intersection of the world supply and demand curves. The quantity of roses supplied domestically with trade is $Q_T$, the imports are $Q_A$, and the quantity demanded domestically with trade is $C_T$. The image is by MIT OpenCourseWare.
Figure 19-5: The impact of imports on consumer and producer surplus

<table>
<thead>
<tr>
<th>Changes in surplus</th>
<th>Gain</th>
<th>Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer surplus</td>
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<tr>
<td>Producer surplus</td>
<td></td>
<td>-X</td>
</tr>
<tr>
<td>Change in total surplus</td>
<td>+ Z</td>
<td></td>
</tr>
</tbody>
</table>

Image by MIT OpenCourseWare.
Figure 19-6: World price and exports

- **Domestic supply**
- **Domestic demand**
- **World supply**
- **World price**
- **Autarky price**

- **$P_W$**: World price
- **$P_A$**: Autarky price
- **$Q_{CT}$**: Domestic quantity demanded with trade
- **$Q_{QA}$**: Exports
- **$Q_{QT}$**: Domestic quantity supplied with trade

Image by MIT OpenCourseWare.
**Figure 19-7: The impact of exports on consumer and producer surplus**

<table>
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<td>-X</td>
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<tr>
<td>Producer surplus</td>
<td>X + Z</td>
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<tr>
<td>Change in total surplus</td>
<td>+ Z</td>
<td></td>
</tr>
</tbody>
</table>

Image by MIT OpenCourseWare.
Figure 19-9: Impact of tariff on surplus

Changes in surplus

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<th>Gain</th>
<th>Loss</th>
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</thead>
<tbody>
<tr>
<td>Consumer surplus</td>
<td></td>
<td>-(A+B+C+D)</td>
</tr>
<tr>
<td>Producer surplus</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Government revenue</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Change in total surplus</td>
<td></td>
<td>-(B+D)</td>
</tr>
</tbody>
</table>

Image by MIT OpenCourseWare.