

Product Development Made Simple: 10 Years and \$240 Million – Peter Connelly (Bayer Environmental)

- a) Innovation – size and experience matter
- b) It all comes from crop pest control
- c) Why has consolidation occurred?
 - i) Crop protection market is mature
 - ii) Must target one or more of big 6 crops
 - iii) Regulatory requirements are increasing
 - iv) Technology changes have occurred
 - v) Increase in biotech use
 - vi) Generic manufacturers
 - (1) Take successful chemicals once patent runs out
 - (2) Sell at a lower price
- d) Consolidation outcome
 - i) 1990 – 13 companies
 - ii) 2005 – 6 companies
- e) Product development curve
 - i) Cash outflow – years 1 through 10
 - ii) Profit doesn't begin to occur until after year 10
 - iii) Products are successful only about 1 in every 200 tries
- f) New products must be:
 - i) Highly researched
 - ii) Superior to other products
 - iii) Selective to pest/low non-target impact
 - iv) Broadly active to pest species
 - v) Long market life
 - vi) Active on a number of sites
 - vii) Fast acting
 - viii) For mosquito control – must have aerial application use
 - ix) Low priced
 - x) No/slow resistance development
 - xi) Low mammalian toxicity
 - xii) No crop residues
 - xiii) Preferably not a neurotoxin
 - xiv) Applicable to crop market
- g) Needs
 - i) Great deal of expertise is needed in a number of fields
 - ii) Academic partners
 - iii) Research facility
 - iv) Network of field trial facilities
- h) Regulatory output
 - i) Animal toxicology studies
 - ii) Environmental toxicology
 - iii) Product chemistry
 - iv) Metabolic studies
 - v) Residue chemistry
 - vi) Environmental chemistry
- i) Costs

- i) 1980s – \$23 million
 - ii) 1990s - \$157 million
 - iii) 2000 - \$200 million
 - iv) 2004 - \$240 million
- j) Active ingredients get reregistered every 15 years
- i) All tests need to be repeated
 - ii) Products must be registered in each state in which they are used
- k) Patents
- i) Filed during discovery
 - ii) Patent life is 20 years from application or 17 years from grant
 - iii) It takes 9-11 years from discovery to market
 - iv) <11 years to recoup investment before generics enter the picture