



Agricultural Chemical Research and Development – A Generation of Change

Wynn John
DuPont

Today's Picture – How Did We Get Here?

Herbicide View



Major Players	# of predecessors
BASF	19
Bayer	48
Chemtura	23
Dow	12
DuPont	5
FMC	7
Syngenta	53
Valent	12
Cerexagre	18
Monsanto	8
Misc.	18
Total	223

From Appleby
Nov 2005



The miracles of science™

What Drives Such Drastic Change?

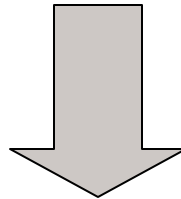


- Consolidation is driven by an effort to reduce the cost of:
 - Discovery
 - Development
 - Commercialization
 - Marketing
- Economy of Scale!!

Typical Impact of Consolidation



When the impact of a merger or purchase is complete the new resource base (people, farms, labs, etc.) is somewhere between 1/3 and 2/3 of that which existed prior to the consolidation.



From this consolidation much of the Contract research industry has evolved.

Change has not just been in number of sponsor organizations!



- How many of you remember?
 - PPI
 - Grid Balls
 - Rope wick applicators
 - Recirculating Sprayers
 - 10s of lb/A use rates, now fractions of an ounce/A
- The art itself has evolved – Fertilizers, Chemistry, Biology, Biotechnology – Now Designer Crops for specific markets – Closer to prescription agriculture.

There have been changes in how the work is done.



- Early on the Dept. of Agriculture/USDA was the key source of innovation.
- Chemical companies picked up on the potential for real market opportunities as synthetic chemical products began to emerge in the middle of the last century.
- Much of the early work was in-house then verified with University and contract researchers.
- Today there is heavy reliance on outside researchers as the internal resources of sponsor companies have been rationalized.
- From every indication this trend will continue well into the future.

Challenges of the contract research community



- This has been a feast or famine business for many years.
- Often the work has been a featured discipline as opposed to a balanced spectrum of work:
 - Early 1900s –specialty crops/fungicides.
 - War years to mid 70s – specialty crops/insecticides.
 - 1955 to mid 90s row crop herbicides (IR-4).
 - 90s to the present :
 - Biotech has commanded the row crop world.
 - Chemical innovations have revived the specialty crop markets.
- Change continues on both the biology and the business side of the equation.
- Successful researchers must be forward looking, creative, and have a keen business sense as they look into their crystal ball.

New Opportunities



- Changing Regulatory environment.
- Changing demands on the agricultural community.
- Advances in technology (BOON or BUST!).
- Oh yes, and industry continues to change its business models.

Changing Regulatory Environment



- National and or state regulations drove the industry for most of the last century.
- Harmonization of the regulatory environment is changing both the requirements and the nature of the work that must be done.
- Data is and will be used more broadly to set MRLs around the world.
- Conformity and consistency have taken on new meaning.

Changing demands on the agricultural community



- Agriculture is the single most heavy consumer of fresh water.
- Urban demand has forced changes in the way water is acquired and utilized (drip tape, micro emitters, chemigation, etc.)
- Where is it headed?
 - Drought tolerant crops.
 - Salt tolerant crops.
 - Specialty production systems.
 - Pesticide Resistance Management/Control.
 - Turf and Ornamentals.
 - Etc., etc., etc.

Advances in technology



- A paper and pencil used to be the standard for data recording, reduction, and reporting.
- Computers and data management systems have created a whole new world, sometimes a very challenging new world.
- Data management competency is now and will be even more of a must for contract researchers.
- Timely collection and reporting of data will determine whether a trial has been successful and gets included in a key decision making milestone for the sponsor. Typically there is no looking back once a decision to drop has been made (no matter how good late arriving data looks).
- Cell phone makes instant communication possible – it is expected and will become an even bigger requirement in the future.

Industry business models



- The complete model has been the main stay of much of the industry through the last century (discover, develop, commercialize, and market, at least until patent expiration)
- Industry alliances with specialty providers have taken responsibility for some or all of each phase of this process for many companies (specialty providers includes contract researchers).
- These innovative models will continue to be tested and lead to change.
- The industry is driven by the need to reduce fixed cost associated with the entire discovery, development, and commercialization process and to reduce the time to market (if we developed the last product in X years why not develop the next one in $0.7 X$ years).

What the industry needs from you!



- Understand the protocol before accepting or initiating the work.
- Implement protocol in a timely manner.
- Treatments are correct and in order when reported.
- Environmental conditions are monitored as per protocol.
- Pest pressure and consistency is noted and communicated as the study proceeds.
- Record pest and crop data as per protocol.
- Timely visits/tours of plots are invited.
- Researcher is the expert on his plots.
- Timely data collection and reports.
- **CONFIDENTIALITY.**
- Follow all safety precautions prescribed in the protocol.
- Conduct the study in compliance with all applicable laws and regulations.
- Get experience, licenses, SOPs and then advertise your capability.
- Understand your capacity and stay within it.
- Honest and ethical compliance with both the letter and the spirit of the laws guiding your work.
- Be accessible and responsive to your sponsor contractor.
- Communicate, communicate, communicate (ask questions for understanding and clarification, return calls, emails, etc.).
- Be an expert, speak up!!!, especially if the sponsor is suggesting something that will not work in your area.

Summary



- We are players in an industry of change.
- Successful players realize the demands and rules of the game have and will change *and* they adapt to the change ahead of the curve.
- Change brings new opportunity – recognize your strengths and develop your program around them.
- Prepare to be an expert for those who need your expertise, don't just offer your hands, your back, and your land.
- Know the value you add, ask/demand a fair price for it.
- Be Safe! Work Hard! Have Fun! Live Healthy! Enjoy your generation in the saddle!!!