NC1186
January 24, 2011

Attendees: Ping Kong, Julie Newman, Adam Newby, Sarah White, Anthony LeBude, Sal Mangiafico, Win Dunwell, Genhua Niu, Guihong Bi, Amy Fulcher, Tom Fernandez, John Lea-Cox, Nick Persy, John Majsztrick, Jim Owen, Michael Mickelbart, Kelly Ivors, Marc Teffeau, Tom Bewick, Douglas Buhler

Tom Bewick – opening
USDA-NIFA – internal reorganization of CSREES to NIFA – new functional unit:
Institute of food, production, and sustainability – 90 personnel in functional unit
Reorganization into NIFA – political appointment –increase AFRI – to $750million (his goal – how to reorganize to increase funding for agricultural science.
Farm bill - debate slowed until next fiscal year – helps identify target # - and then identify within that target where we will fund new areas w/I the mission area to incorporate new funding (down the road)

Non-food horticultural crops are becoming more important (i.e. our clientele are urban communities) USDA will have to expand their focus to include the populations within cities

When we created our proposal – Tom Bewick reviewed it – he is our "default" NIFA liaison – limited travel budget

NIFA – may try to hire another horticulturist to help cover these meetings.
He thought this an important meeting, because this is our inaugural meeting.

Technical project issues – IRB review – because we
Some Hatch proposals deferred – universities need to designate 25% of hatch funds received for station so they can use hatch funds.
We need IRB approval because we are submitting a survey
Does involve human subjects, but we aren't doing anything until we get IRB approval – but this helps universities have projects approved
4-5 projects were deferred . . . (Don Merhaut – check the IRB approval will be gained).

Each university IRB will have to go through IRB process – because it is a national survey
Use same documentation amongst universities (same proposal letter etc.)

Each university will need to obtain permission to use a survey.
(Sal – if we touch data have to have an IRB)

Personally identifiable information –we are sensitive about it – because we don't' want a "worst-case" scenario to occur

Julie – each institution has its own IRB certification – is IRB paperwork the same? Are they asking the same questions? *Tom* – NIFA – IRB menu of exemptions – if they are allowed to say this is exempt because . . . then they will get a blanket exemption – if one institution gets an IRB exemption, chances are most all institutions will give an exemption.

John M. – group letter, survey – use as a template for all collaborators – will be easy to put into IRB forms, but it will generally be exempt for the same reason.

John Lea-Cox –SCRI review – can we help you with SCRI review process or help make your life easier once you receive the applications?
Tom – paperwork reduction act- they will ask for information once – they ask through CRIS – so good information in CRIS is critical – or good thorough information needs to be provided.

CRIS reporting: Doesn't want objectives in outreach/impact section –

1. do we know how many people are using information
2. how many jobs provided
3. how much money saved for people that we serve?
4. Impacts not meetings/grad students – outputs – they need outputs – how much money saved etc.

CRIS reports are read . . . as some administrator asks a question – what are we doing in water quality.

T. Bewick –example – he calculated that 'x' acre feet of water saved, impacted life cycle of certain pest – reduced insecticide applications by ¼ oz. per acre, but also saved so many acre feet of water –with millions of acres – saved enough water for the city of San Francisco for 2 months. Less pesticide – a "negative" impact – but think about impacts based on how they would impact non-traditional clients.

Brief report – external review of SCRI – team assembling today – start working tomorrow –self-study document provided 1 month ago – reviewers come to DC – they will write a report. Document will be on website – information that is helpful to include – broken down by crops, state, where funding is going etc.
Once report returned and analyzed – the external committee report will go up on website. With USDA response to critique. SCRI more information page.

<u>Station Reports</u>
Julie Newman – UC CA - # ongoing project – water quality 319H grant –state water resources control board $700k – not as big as in previous years – focus for all of agriculture. CA area where ag occurs – serious regulations proposed, not implemented – make many agricultural producers monitor and report on their own property – buffer strips mandatory (e. coli – sterile/no buffer strips – contradictory bmps recommended). Grant working with all of ag ventura and LA county – quarterly educational programs, working with NRCS on-site visits BMP implementation, monitoring group – monitor BMPs in terms of TMDLs.

Contradictory information – dept. of quarantine, dept of water etc.

Loren Oki – slow sand filtration

Sarah White – Clemson Univ.

Anthony LeBude – NC State
1.25 research FTEs ornamentals 1.75 FTEs extension
Visited 75 nurseries and sampled water irrigation – wells, ponds, surface water in collab with NC NLA & NCDA – irrigation ponds refilled by wells, less extent from well – recapture – go into same pond they are irrigating out – passive remediation of sediment/pathogen load pond-to-pond.

Low pH/high alkalinity is an issue - HRI rhizosphere acidifying species etc.
Many grower say they recapture 99% of water – but all recapture into 1 pond – and channeled into –

Sal Mangiafico – Rutgers – extension agent environmental and natural resources. (Residential concerns ½ time – educated about issues).
Grower major concern –
Pressure from environmental group and regulatory groups re water quality. State TMDLs around land with ornamental production. Watersheds have implementation guidelines (P and fecal coliform).
Growers concerned with water quantity – high population / high ag – run out of water if growers/farmers took all water they were allotted.

Sal – developing 20 pg books for growers 319H grant focus on education/demonstrations for growers specific to 1 watershed – but would get out to growers in the state.

Grower support is positive –they are concerned with the issues, they want to make the industry look good.

NJ – law re. lawn fertilizers (not impact sod/golf course) aimed at residential/municipal purposes. Aimed at P – no P applied w/o a soil test – amount of N, time of year N can be applied, 15-20% slow release N in fertilizer –can be regulated by municipalities. Fertilizer manufacturers make P free fertilizer for lawns – don't have P readily available. Do landscape contractors have reporting requirement. Landscapers have to be certified as a corollary to the law.

MD – if manage > 10 acres – then have to report what you apply.
MN – no PO4 in fert

Win Dunwell – UK
D. Ingram – back in department working in ornamentals – interest is LCA – "total awakening" – economic downturn 5/10 acre nurseries alive & well, big tree nurseries struggling. "small" growers didn't notice a "significant" change. Last 2010 mtg NC1186 – learned that growers & researchers were excessively overwatering – leachate was too much, recommending altering activities to looking at leachate and how much water is going out of the bottom of the container.

2009 – excessive water during the summer, but economics – tree nurseries wanted to reduce mowing/ (too much mowing). 2010 – too much water in some areas/ too little in others – economically detrimental – now that water is an issue
Louisville a "green"city – green roofs, stormwater plantings etc. Municipalities – look at weather models and how this would influence the industry.
Undergraduate program – student pop increase ornamental hort & turf are the major players in the plant arena (65 students)
Blog set-up to put nursery information in a single location for growers to access. Hope that industry will interact with the site – look for some way to exchange more information amongst themselves , that would be available to growers throughout the state.
In KY – it's hard to get a handle on whether people care about water quality –except for the mammoth cave areas – but that might change dramatically.

Guihong Bi – (Mississippi state)
Effects of CRF type on nutrient leaching and uptake in gh & nursery prod systems. Quantifying nutrients lost through leaching and nutrients taken up during 11 months using 4 different types of CRFs and standard production systems. Pubs upcoming (Eugene Blythe) analysis of pH data etc and statistical methods.
Bi – different station, nutrient uptake efficiency in container crops in gh & nursery crops – fertilizer application methods – foliar urea before defoliation to increase N reserve to increase total N input – we are also doing organic greenhouse container production – alternative substrates, nutrient management and organic landscape performance.
SCRI – bio container and water irrigation management

JLC – how tracking foliar applications? Perennial plants can apply foliar urea before defoliation F18 urea – to check where N goes and how much available for use the following year, in OR – used almond/apple trees – saw good effect. MS – hydrangeas – decreased N input during growing season, and supplement with urea application (3%) harvest plants and look at performance & harvest – look at where N goes & when by staggered harvest dates. Can decrease N inputs and improve plant performance.

Amy Fulcher – UT Knoxville – no planned report but will try to provide something useful and relevant.

Water use and irrigation technology – ecophysiology emphasis – continuing to look at how these & IPM can intersect.

ListServe – for those that do nursery research and extension work - send Amy an email and she will add you to the list – keep an academic membership – so we can share w/ some anonymity for client protection. A good way to help each other and share information. Good pub, good website. Modeled after OrnEnt listserve –enhancing ability to work together and collaborate. Create research projects through their interactions. Univ. Nursery Crops list serve.

eXtension group potential for tomorrow

Mike Mickelbart (Purdue) –

Growers – plenty of water/nutrients - they don't realize – he is trying to educate growers how they should be watering fertilizing.
Growers can cut back by ½ normal rates and reduce leaching
Fert effects on leaf hoppers
New grant- Internal to Purdue – denitrification and volatilization from containers. – with urban atmospheric science dept.

Tom Fernandez- Michigan State
In 2000 – great lakes st. Lawrence compact – focus on water use issues.
Water is a pretty bi issue for growers because of the compact. MI is trying to stay in front of that wave – driving the research of the last 6 years – irrigation/conservation realm. Nick will present in depth. Aaron Warsaw just finished.

Reduce irrigation rates and basing on plant water use. – 0 or "negative" leaching /deficit irrigation.

Bert Craig – submitted (last year) revitalized pot-in-pot nursery in the area – tiles underneath each row – can collect leachate from each row. Bloodgood plane tree and conifers (25 gal, 7 gal) conventional CRF vs organic fertilizer. Bloodgood – no growth differences between fertilizer types – 25% reduced growth w/ organic fert for conifers.

Containerized Christmas tree/field Christmas tree – forestry colleague.

John Lea-Cox
Maryland – bay-wide TMDL (all 6 states in Chesapeake bay watershed). Tributary based watershed strategy for implementation of TMDL – so a bit ahead of the curve. Nothing to do with MD DA – EPA finalized rules, Dec 31 – all states organizing into watershed implementation teams (WITs) EPA listening sessions – basically backstopping action -2 year deliverables as states – to show impacts of these plans. If you don't meet goals every 2 years – penalties will ramp up on the state – denied WWTP permits if not-in compliance. So reductions will be met one way or another. – no new cities, highways, etc.

Washington DC – impervious surface tax – Fed Gov't biggest land owner in DC - $18 million taxes – how DC funding $4 billion tunnel to separate combined surface water / sewer outflow. Urban areas – green roofs – why focusing on the east coast. PA is in a world of hurt in terms of meeting targeted reductions.

Farm Bureau federation sue the Fed gov't on how the regulations done for the Chesapeake.
Clean Water Act 30 years – nothings been done for 30 years, something needs to be done. Some loophole – power of specific regulation can be negated – loopholes – take away enforcement issues.

Sal Mangiafico – ag in general how receptive to cleaning up water.

Julie working with all of ag – nursery industry tremendous response, other ag growers not as responsive. Container plants need water. (Tom F.)

MD – not focused on water runoff – simply having water available (JLC). – Growers having to truck in water – water availability issues during drought times.

Jim Owen – water rights – impacted negatively for changing water use – if they use less, they may have less in the future. It's a big issue – they need water and want to maintain water use rights – water allocation - if you don't use it you lose it.

NJ – if you don't use full allocation, you lose it (over a period of years).

Tom Bewick – Colleen Hefferein – administrate (past) CSREES – new director of national arboretum – SES (senior executive service). Arboretum has had issues in the past hopefully this will turn it around. JLC- plant breeders at arboretrum excellent. Richard Olson – sounded very positive over the new director.

Dan Struve (via. Adam Newby)
Increasing water use efficiency with precise irrigation control.
Does water potential of the substrate matter with crop growth potential. Does substrate water potential change with crop and changing substrates. . .
Weight to monitor water status of the plant. Using – moisture release curves from the soil column (jim owen james altand developed) – relate to water potential.

Effective container capacity (current weight – tray/pot weight = effective container capacity). 100, 90,80,70, control ECC.

Weight changes good way to look at evapotranspiration – can monitor every mL of water in and out of the system. (measure C allocation root:shoot) 100% how does that measure against normal irrigation events? What would a grower normally apply? JLC- growers may have no idea about how much water applied vs. how much needed.

Adam- maintaining containers at 70% ± 10% difference in container capacity – balance connected to datalogger – RT data recording.

2x during study – resaturated media – to determine "new" weight at container capacity to account for Vinca growth. No difference in size – document difference in quality with various treatments. Production time? Is it shorter, longer, the same?

Wetting agents and leachate study: forsythia 'Lunwood Gold' 2 x 2 factorial 0 and 20% LF and 0 and 10 ppm wetting agent applied at each irrigation event. Each treatment had 2 or 3 solenoid valves (each rep 5 plants and 1 indicator plant in a bucket to collect leachate – and id leaching fractions). Wetting agent increased WUE significantly. Differences in root density? (JLC) – publish results soon. – bigger plant with the same water.

Genhua Niu, Raul Cabrera, & Terri Starman – TX A&M station report
Cabrera – managing nutrition irrigation water quality & salinity tolerance
Seasonal & diurnal ion and water uptake patterns in greenhouse roses – uptake increased with leaf area development. Ion uptake was minimu at rapid flower shoot developing stage as

was maximum at maturity. Diurnal pattern: water uptake was highest at noon max nutrient uptake higher in the afternoon.

GH roses subjected to partial rootzone stresses
Stresses: salinity, alkalinity ,high boron, high ammonium
Roses sensitive to partial rootzone salinity and alkalinity after 2 flower flushes, higher B & ammonium were not significant difference. SNA publication w/ this study.
Niu: Salt tolerance of bedding plants [not presented: 1) drought tolerance w/ different irrigation mgt strategies: irrigate to container capacity, wait until target weight and irrigate again; 2) salt tolerance of white flowers]

Angelonia angustifolia 'Purple' very salt tolerant – subirrigation, 4" pot – petunia grow quickly transplant during middle of experiment. Flat inserted into container with subirrigation treatment solution.
Gomphrena –EC 2.8, (4.5 – best quality plant), control plant looked wilted – substrate moisture was adequate. 24 d EC 2 exhibited wilting – perhaps due to double shade cloth – sunshine DLI average was 10, but gomphrena wanted higher DLI.

Gazania - highest salinity trt – flower bud senescence was early
Petunia – 3 cultivars tested were tolerant (18 d subirrigation, transplant 1 gal. top irrigate for 24 more d – no visual damage at EC8 irrigation. Control plants larger, but saline water may reduce pgr application rates bc plants will remain smaller.

Marigold – most sensitive to subirrigation – 19 d – show wilt damage 5 d later plant death quickly occurred. Repeated with top-irrigation – marigold showed difference

Determine effects of reduced soil moisture content . . .

PK – did you measure ions in plants (salinity in plants) how much Na was taken up? GN – we measured, but I don't remember. Is all salt in substrate? Since no leaching – are plants actually taking up the salt or are they tolerant/excluders . . .

Salt tolerance of various bedding plants CA- review paper most complete information for salt tolerance. Article in (SNA?) contains pdf.

Usually 2 dS salinity (not higher usually in irrigation water). 8 dS/cm – for screening purposes.

<u>Jim Owen</u>:
New regulations for pesticide, turbidity, temperature (salmon spawning). NRCS funds extension pubs to address water quality. Nurseries (reduced water by 15% (jim) 30% (growers) – by monitoring leaching fraction.
Have you compared gravimetric with meter – PureSense – deployed on 2 large nurseries.
Weather station for each zone – soil moisture probe in container with load cell. Heterogeneous blocks & homogeneous blocks – determine cost points. Each zone 3 – 5 acres – homogeneous all azalea w/ different size containers. Mixed block 250 cultivars of different sizes. All overhead irrigated (still manually irrigated) How much to irrigated to reduce water. Help monitor

irrigation from "window" just like a weather station gauge. iPad app – incorporated w/ time on it – tell 25, 30 or whatever so they can figure out how long to turn on irrigation. 15 m intervals (hard to map efficiency).

"Future" Jim Robbins – low-elevation, unmanned aerial vehicles – multi-copters above plant canopy – using offcolor/IR imagery make inferences into crop stress. Look at wetting pattern for irrigation efficiency – how it drops out, cover crop growth (how drainage works). ($2000 – hook up a canon digital camera – software needs to be tweaked, open source software . . .). Keep under 500 ft to avoid air traffic regulations).

Alternative soil substrates – water status – WUE – all things water – why do we use peat and pumice in doug-fir-bark substrates? What does it mean to the corp?

- Pumice doesn't help excepts for aging – but can be detrimental up-front
- Peat – increasing leaf length with % peat
- All the data fit with increased available water- so relationships correlated very well

Whole plant water use efficiency – g/mL – poplar tree with known particle size – add from 0 – 60% how will that change WUE?
Runoff mitigation – demonstration sites – monitor water quality throughout the year.
Understand diurnal effect in different pond systems. What much N&P could be accumulated by different species. Buffer strips – 100% N&P removal if designed and installed properly.

Climate Friendly Nurseries Project – variable speed pumps – cost impact to install variable speed and how quickly that pump paid for itself in energy reductions.

Irrigation strategies to conserve water in container production.
Consulting firm – excel calculator – "C footprint"
They are seeing differences in adoption: Lighting, variable speed pumps, etc.

Runoff pad – overhead vs. microirrigation on hysteresis (wet dry phase). Dibble (low vs. high) argument lose less vs. top-dress, taxa – crop response – EC lower –better thermal buffer. Crop response – doesn't matter where you put it (cotoneaster & azalea).

SM – Puresense (capacitance probe)sensor – Growers want a min and max bar – as long as they got enough contact (TDR) – gravimetric and capacitance probe were similar for grower. So if growers can set wet & dry points – then grower can determine what's "wet" and what's "dry" to set high and low. Capacitance work better for irrigation in the system. Multi-pot capacitance. Use 10hs(black and red) – standardize to 10hs sensor – better precision.

LF and uniformity of distribution – once canopy's intercept – LF via pot /vs cup no comparison – canopy impacts "wash" what's perceived and where to put probes – the growers put the probes at the points in the production bed. They even put it in the cointainer. The growers knew what "min" and "max" (they were willing to reach) felt like. Integrate at Woodburn and Bailey and use to direct irrigation.

Geo-spatial variation/ cells

Ping Kong
Chuan couldn't make it – extension report at regional meeting.
Impact of water quality on *Phytophthora* survival in irrigation reservoirs
Growers recycle water – *Phytophthora* is an issue –what species are found in retention ponds?
Well known – 8 species
Named -5 species
New species – 8

P. nicotianae - detected – has a very wide host range.
Pathogens travel in water: species presence in water declined with distance?
Why was there a decrease in pathogen presence?

- What pattern of water quality
- How pathogen respond to stress?
- Continuous water quality monitoring? Chlorophyll A (µg/L, EC, DO, pH, salinity, temp, NTU
- Winter vs. spring and summer vs fall
    - Winter spring pattern different
    - Summer fall more variable
- pH consistently high – algae bloom start & decline cyclically
- Does pH matter? Higher pH – shorter survival
- DO – some interesting results on pathogen survivability
- Algae bloom/decay appeared to be a driving force in winter/spring

Kelly Ivors- associate professor – phytophthora (P. ramorum postdoc UC Berkley) – phytophthora species in irrigation water – processed samples for pilot program for P. ramorum detections in forests (throughout NC) – in ornamental & forest systems.

John Lea-Cox
Http://smart-farms.com - 80 page first year report SCRI MINDS
Cover information systems (sensor networks)
Management (scheduling)
Hardware development – George Cantor- Decagon – nodes – base station local network on farm (computer/smart phone RT network). Now interface decagon base station (sniffer network) mirrored to Carnegie melon – apps for using irrigation sensor information:

New monitoring and control node (decagon) – 30 ports – (sensor inputs) radio card – switching solenoid control? decagon – moving into. Help make control decisions (irrigation, fan, etc.)
Decagon networks- and CMU networks. 2 coming together as of April to new node.

Engineering Development-

- create a software system, easy to use (like PureSense interface - rentable)
    - growers want to own their own node – local capability
    - customize networks so growers have a choice (like cell-phones)
- GUI most important part – user friendly and more flexible and friendly than current data tract.
- Moving to virtual sensors – temperature and RH to produce VPD measures

- Modeling Crop-specific water use: (van Iersel) simple models – measured daily water use VPD, DLI – drive crop water use and into model: can integrate advance model information with the GUI –or predictive capability
- Richard Bauer (with Marc van Iersel)

Green roof research site – data tract interface (nodes to right) input data on left (temp & water holding capacity) volumetric water content on different plantforms or different depths on the same platform. Stormwater intensity (5"/hour intensity – imbedded in longer storms) – Runoff rate difficult to measure with high volumes removing.

Weather node installed than with sensor node – more information for growers with weather node. Seasonal data is very significant and can see relationships by season.

Stormwater Model
Spatial and temporal variability
Indicator species (translational knowledge)
Production systems

Case study:
2 indicator species Cornus florida, Acer rubrum (high & low WUE species).
2 nodes 5 sensors @ 6" and 12"

1 year Cornus florida – transplanted June 2010 – irrigated 2x daily.
Wanted to know if over irrigating transplants: sensor at middle of every plot.
Cut water use by half – 1 hour/day instead of 2 – monitor using rain gauge under drip irrigation – so know irrigation volume – if rain event

25% - 27% volumetric water content- grower was happy saved 30,000 gal/week –thus could be put on trees that would not have been irrigated. How much growth would have been lost had the trees not been irrigated.

Terry Hines McMinnville, TN – soilless substrate
3 maple trees – 2 nodes/tree – 8 sensors – rain gauge at top – irrigation in – leachate out measured.
6 minutes/cycle 4xs per day – 2 gal/day on a daily basis – on average

Economics and outreach – 6 economists combined from 2 projects (Lea-Cox and Chuan SCRI teams)

Student Presentations:
Nick Pershey – Scheduling irrigation with daily water use conserves water and reduces runoff
Quantifying daily water use and using to schedule irrigation
Control 19 mm
3 daily WUE – replace 100% Daily water use each day
100, 75 (2 day cycle)
100, 75, 75 (3 day cycle)

8 different plants per trt. Monitor substrate volumetric water content (TDR probe) – measure each container – get plants to container capacity (measure after 30 minutes, come back next day and measure with TDR – plant water use
Save 18-58% water applied by applying based on Plant water use.

Soil volumetric water content – Hours after irrigation

Crop coefficient – DWU – divided by season/PET

John Majsztrik

Chesapeake – federal tmdl this year- 7 segments – N,P, & sediment load limits –
Stella modeling software – icon based modeling program

Why stella?

- "systems thinking" big picture approach
- icon-based simplifies model construction
- graphs tables & excel output functionality

NC1186
January 25, 2011

Business meeting:

1. Administrative Advisor Comments (Doug Buhler)
   Tom Bewick covered some things he might normally mention. It is interesting that those of us who work in the world – what confusion re Tom Bewick's role vs Doug Buhler. Tom – NIFA, federal broad oversight – creation review, approval and management of multi-state committees falls under the ag experiment station. All committes connected to a regional network. Federal have oversight, regional have nuts and bolts of keeping things going. In many ways, since we have an approved project, there's not much for Doug to do for the next few years. There's a nice broad project etc. Take first 5 years – to bring as many people to the table as possible. Good base to start with – by applying for a national grant already, rather than a few years down the road. To get funding, funding in the extension system, really just gets the colleagues together. The regional projects – develop opportunities and link people together. Regional committees linked because of administrative committees.

   Discussion at experiment director level – to build around grant opportunities rather than the traditional multi-state project. Form a committee for the specific purpose of writing a grant proposal. Now we have an opportunity – 2 years to write a grant proposal – perhaps a year extension to do a rewrite. He enjoyed hearing what we are doing. The framework of model(s) – appropriately constructed models facilitate national impact.

   Multi-state committees have done workshops – add a day onto their workgroup meetings. We have a group of people (from coast-to-coast) in a location where growers could meet.

We could have a high end workshop with little additional cost. Think about workshop possibilities to increase "visibility" of information to our real stakeholders.

Doug – a year to 1½ year – becomes interim dean – he would like to continue working with us and the other committees with which he works. He wants to continue to help. Posting to NIMMS
He is proud of helping pull us together – we are off to a good start.

JLC – thank you Doug for all of the help you have given us for the past 3 years.
DB – you have been a very easy group to work with – if you are willing to put in the time, it is very easy to help.

2. Industry Advisor Comments (Marc Teffeau)
MT – thanked you John – he hoped some would take advantage of the clinic program after – ANLAs premier event for the growers. Business mgt focus, personnel mgt for the industry. ANLA doesn't do training (like how to grow crops) – he refers them to extension station/programs..

HRIs –national non-profit, research arm of ANLA. HRI is a separate corporation, but there is a relationship betwee HRI and ANLA. Celebrate 50 years next year. Endowments of $10million – if you apply for an HRI grant – it is funded through this program.

Funded $219,000 in last round of grant funding. HRI grants go through a review process. Teresa Jodon (executive director) manages the review. Ranking system – goes through a review process, Industry review- major donors mark for relevancy. Take top 20 scores and executive committee makes decision (ranks) – set $ resources are available – if funding runs out at #7, #8 won't be funded. Due to his experience with SCRI, AFRI – HRI grant review process has been modified and strengthened.

Two representatives from ARS work with HRI to rank grants. Explained Floriculture and Nursery Research Initiative (FNRI) – it is in the base budget of ARS – every year ANLA lobbies to increase funding for FNRI. Every year, they look to see how research projects work together- to synergistically address industry needs.

Business model – given the state of the industry, our industry has been generous over the last 49 years, we are still in a recession (until the housing market turns around). Demographics of our industry have changed. Baby-boomer cohort has moved on, so spending habits have changed. Smaller # coming up, discretionary spending has changed. A new "normal" will have to develop. We will all have to adjust to this new norm. Thus we need to develop new revenue streams to fund /make an impact on the industry. They are commercializing projects- Green Industry Innovations – keratin chicken feathers – non-degradable plastics, exclusive license in Canada & US – they are negotiating sub-licenses. In next 5 years – 7 figure income into HRI – invested in endowment – and then reinvested in industry research.

Marc also works with 1021 group – ag economists and horticulturists. HRI funded the national nursery survey – available through Marco Palma (Texas). One difficulty, statistics

around the green industry. 2009 census report, 2007 NASS results. ARS has done some industry work. National survey gives us a snapshot of US industry.

Tom talked about SCRI funding – John got SCRI funding that is a great leap for the industry, Chuan Hong with Phytophthora work which is a very good process. As the specialty crops industry groups step back and look at SCRI. 1st issue – the match. The match was not in the initial legislation on the house or senate side on the farm bill. Initially no support for the matching concept. It is problematic. Trying to manage a grant of this size with matching requirements is very difficult – to account for the matching required. In this economic climate, working with the house – deficit hawks are looking for reason to cut anything. NIFA won't be able to get any increase in the research budget, whole idea keep what you have. Politically – match is good, industry dollars, industry support to match federal dollars. From an administrative/mgt standpoint. Some real issues are raised, a division within the industry – from ANLA perspective – disenfranchises federal researchers because they can't provide a federal match. From an 1890 standpoint –some discrimination issues. IN the 2012 standpoint – can't get rid of match. Specialty crop farmbill alliance – specialty crop "lobbyists" will make language change recommendations in the next farm-bill. In the house ag-bill, the next farm bill won't be speeded up, so the next 12-14 months breathing room to insert correct language in the bill.

SCRI review process- there are some major issues. SC farm bill alliance – other industries concerned when look at what funded through SCRI and industry priorities – there is not a correlation. So how is the decision making process done. Why is a grant funded that is not a high priority or that is not relevant to their concern. The real issue from ANLA – research funding for SCRI driven by the SC farm bill alliance industry. To get more industry support for SC research. In NIFA/CSREES they have tried to put into their traditional agriculture mold. Industry feels disenfranchised in the process. Bc some funded projects were not a priority. Bc. the nature of the funding is different and match requirement, there needs to be a different review process. The culture of NIFA is not industry friendly (regardless of what they say) SC are not the primary stakeholders.

Match and review process are 2 major issues in the next farm bill for SCRI funding. Across the board grapes, almonds, blueberries, nurseries – everyone has consistent concerns. Helpful for us (researchers) to understand industry perspective.

JLC- I'd like to understand from ANLA/HRI – if the industry or SC groups feel their priorities not being addressed –mismatch at the review process or researchers not doing due diligence in getting together with industry to determine priorities. What are ANLA/landscape industry priorities? Can you provide some insight?
MT – generally when we look at supporting research 1) does this research address a current/potential regulatory/legislative issue affecting our industry? MT can't lobby for industry, but there are ANLA employees who do. MT interacts regularly with OSHA (injuries) and EPA (pesticide) agencies to make comment and write comments in federal register supporting the industry position. Always in MTs mind –what's coming down the road regulation wise – clean water act and drift issue with pesticides of pressing concern. Federalization of Chesapeake bay and TMDLS NNC in FL – anla needs to know what we are

doing so they can show our research to show what we are doing to reduce our impacts and produce a sustainable industry. 2) How is the research affecting the bottom line, financially of the industry? Industry is feeling the squeeze on the margin – labor, mgt of external inputs in production (pesticides, substrates) – anything that helps hone the competitive interest is research they try to support. 3) New product, marketing, new plant introductions in the industry. There has been an increase in "branded" programs. Work through the supply chain and set apart distinctively on the retail shelf. Looking for proposals that look at marketing, retailing, business management aspects of the industry. Does the research do one of the three things – if it does the research is considered, if not – it won't be considered. So we can use these three perspectives to guide research. Life cycle analysis is of interest and they are starting to fund some projects (Auburn C sequestration).

C sequestration – political PAC – fundraiser – federal trade commission green guides – our industry does not need to get into the habit of making C sequestration claims (or environmental claims – i.e. biodegradation) that cannot be backed up with solid, replicated, peer-reviewed research.

Additional points –alternative substrates workshop at SNA. Session videotaped, will be edited and posted on HRI website. HRI is a business – they like to package their information – they would like to work with use to get the information out to the industry.

Journal of Environmental Horticulture – current editor Tom Fretz, is retiring. January 1 – executive committee charged Marc and Teresa to look at where the journal is going to go. Whether we continue in the format the journal is done. It is not a financial drain on HRI to publish. All back-issues are on website, archived, and searchable. Who do we want to hire to be an editor? Contact Teresa or Marc. But bigger issue – help transmit information from researcher to the industry. In todays environment is JEH still the best way to do it? Strictly online? Keep print version? Do we change/morph journal into some other mechanism. Some institutions don't consider JEH a quality journal (a second tier journal). Depending on academic "pissants" on tenure and promotion committee – JEH doesn't count as much as other peer-reviewed journals. From HRI standpoint – they feel less-competitive. They realize there are other 'discipline' focus-journals, the focus of JEH is to transfer research information to the industry and research community. JEH strictly ornamentals. Where will JEH go – a survey will be sent out – asking where it should go, how it should position itself. They need our input as a user to help make JEH more relevant.

JLC – 2 quick points – get JEH in a citation index – it needs an impact factor. 2nd turn the review process around 6 weeks review, rather than a 6-month review. HRI review process structured well –efficient quick and easy – give editors review deadlines, to encourage.]
JO – citation index important – in the trans-disciplinary impact – if you can show the publication goes directly to your stakeholders – then the journal is more important. We need the statistics that the journal fits the job-description.

MT – Teresa & Marc haven't done a large marketing campaign for the journal – they may try to push distribution #s up so that when articles are cited there are good. Get google analytics

on website – Teresa has been looking at that – as well as online donation. Promoting membership of HRI.

JLC – it's a very valuable journal because it is industry specific.
Anthony LeBude- JEH is very industry specific – and important. Don't make JEH a trade publication.

MT- the journal is not dying – stewardship wise they needed to determine if the journal was still relevant – and meets researchers and industry needs.

HRI has to have something to provide as a membership benefit. Libraries pay for electronic access. He appreciates our suggestions for making the journal more relevant. There's not really a price point.

Doug Buhler – Applied science and the environment – take the initiative to show why the journal is important. We need to do our best to get journal #s out there. T&P committee work really hard to evaluate people based one what they were hired to do. The people who do things well, and document why it's important and how they are impacting their stakeholders. Tell people why your work is important.

3. New Project Activities
   SCRI planning grant discussion

4. IRB Requirements, Coordination (Deferred to after business meeting)

5. Website development
   John – didn't move forward on the website. We need to a better job of advertising. JLC- we need to buy a domain for 5 years – (it doesn't matter who hosts it) – it's simply tied to an IP address. For a national group – it needs to be a domain, as a basic decision. Once we have a domain, how will we develop the website (html?) If more visionary aspect – put in learning management systems (Moodle) – eXtension uses moodle – modular operation learning management system – like blackboard, webct. Moodle is a box of tools that makes integration with other tools easy (like integration of a youtube – 5 minute clips – easy way to get graduate students engaged).

   JN – what are the website objectives? Communication within the group? Or communication to an external audience . . .JLC – communication to an audience, limit information overload (reduce amount of email sent out). Wanted to efficiently send out information. JLC – SCRI project bought traction software –"project management in a box" communication tool – an easy way to post information – weekly digest of 1 line notes.

   JSO – good to have a web presence before the planning grant/CAP grant. (Buy a domain for planning grant).
   JLC- basic html website, buy domain, build website, get our name, project proposal available, get project activities linked in. Establish a presence as soon as possible.

RTF – good approach to take, secretary update website quarterly – with project related work. Content needs to be updated regularly. Design so the website always looks fresh. Maintenance – by early summer have a website created, but as a group we need to decide (if we have a subcommittee). Minutes, station reports, as pdf, proposal, links to current project, a calendar.

WD – motion – develop a website, develop a domain name – domain name – short and descriptive – email round sent out this year – hopefully an email. Committee/working group of a few people.

JSO – website chair that has to corral the group, the secretary takes minutes, station reports. Secretary filter mechanism for comment. Secretary a member of the committee – Chair + website committee to get the job done.

JLC – subcommittee put together, JLC – willing to host, provide domain, others put up information.

SAW – seconded motion, unanimous in favor.

JLC move to establish a website committee, comprising the: chair elect, incoming secretary, and the past president. RTF – second the motion. Good to have the structure, if others are interested – then volunteer- it is not exclusive. Links to webinars etc.

JN – webinars from Paul Fisher – resources page – link to different pages and get researcher names out – shows the breadth and extent of our group.

Good place to post quick titles/poster pdf. Contact card information (link to faculty page). Teleconference/connect session as a subcommittee (within the next 2 to 3 months).

Domain name suggestions:
KI - ornamentalwaterworks

6. eXtension Group Development
   Tom Yeager – interested in group participating in eXtension. USDA founded eXtension. Huge commitment to be a part of a community. Chuan Hong – involved in eXtension. JLC-knowledge center – similar to a eXtension

   Most famous eXtension: Horsequest – learning modules about horses . . .take care of, feed, vet etc.

   National community collaborates within the communities
   MT – a solution looking for a project –
   JLC – a great way to get other people to do your work for you.

   Who populates eXtension – extension specialist provide content
   DB – if you can show eXtension is having a major unique impact it might get mileage

WD – Kentucky founded with horsequest – in KY – they have to be involved – it feels like a county meeting. It is peer reviewed, nothing gets posted without 3 people recognized as part of the community reading the answer (author + 2 others)

KI – eXtension – similar to a resource that people don't talk about plant management network (PMN) – a partnership American Phytopathogen Society, American Society Hort Science, CSA (crop society of America) a number of online journals 45,000 readers – content goes out monthly to readers. If looking for a place look at having a focus on ornamental page.

JLC – personally – focus on time management – sensitive to doing things that will 1) communicate with stakeholders directly, - journal article followed by trade article – if we thought about establishing a community of practice – it would be this group.

SAW – website is our mission right now
JSO – write an article for NMPRO who we are, what we do, what we've done – subscription for notice.

Further discussion – do growers know about eXtension? Where do they find their information?

JLC to MT – is their something we can do to find out where growers find their information?
MT – might be able to work through grower division board to contact members and ask that information. Where do growers go to find their information? Must be easily searchable.

Educate grower community on how to use the resources. Workshop/educational effort to teach growers how to use the information that is available out there.

7. Nomination and Election of New Secretary

RTF – nominate Amy Fulcher for the secretary
Amy willing to serve as secretary, any other nominations?
WD seconded

Amy Fulcher elected secretary.

8. Location and Date of next meeting

The floor turned over to JSO & SAW.

Location date next meeting Farwest 2012 (if planning grant funded)
Other opportunity – Dr. Handrick and Sophia? Australia – show us their drought issues in Australia, 7 year drought – what it really means to understand water issues. They are moving from ornamentals to natives.

JSO – table discussion until we know if planning grant is funded. If planning grant is funded FarWest is the last grower group – so we would put our meeting on the tale end of the FarWest and facilitate planning and development of CAP proposal.

If it is at FarWest – 1 day symposium for growers
KI – would like to have a tour of OR nurseries

2012 potential meetings: does summer work?
Nice with grower meeting, tour, symposium,
OFA (mid July 2012) – NC1186 held with OFA (planning workshop if grant funded)
California (June) – if grant not funded –NC1186 held at California Grown

9. New business (Open to floor)
   JLC – formally thank Marc & Stephanie Stockton for helping with arrangements at Galt House – ANLA picked up the cost of the room for the meeting.

   JSO- thank for initial committee for getting group together. Check IRB status, thank chair & past-chair for a well-set agenda etc.

Outcome of meeting:
IRB approval for NC 1186 group (and training that is necessary) – because we are using the survey instrument
Send out:

ACTION Items:
NC1186 – if representative for institution for a state – need IRB approval & training
Planning grant – need to have training, but IRB approval through Clemson IRB

Send my IRB approval out (letter, survey, etc.)

Who can actually give out the survey (how many need to be on the list). All PIs will have to have IRB and any collaborator that will host at their state association will have to have an IRB.

Survey discussions:
Listening sessions
Julie Newman | Sal Mangiafico

Survey started in Ventura county – but survey then taken to central & southern CA – 85 surveys used.

This survey – baseline: survey is longer and a little more detailed. Base survey 45 – 1 hour to complete. Current survey take 1h 15min to complete.

If optional – offer survey opportunity before the meeting (get 2 h of credit – for completing the survey). Start out and give an introduction as to purpose of the survey – why we are doing it – drive home the fact that it is confidential – that they will not be penalized for answering questions honestly.

Survey:

Add logo of state organization administering survey

Offer 2 hours of credit, perhaps take 1 h and 15 min. some growers may say we need to go back to nursery to properly fill in the information – pesticide credits not given until completed survey returned.

2 people funded to help people fill it out (get more data).

Most important part – a few growers will download and do independently – most people would like a little help during the survey. They would like to have access to someone to answer a few questions.

Make growers aware of survey –fill out what they can on-site bring with you to meeting, perhaps leaving blank anything you have questions about.

Perhaps 150-160 questions in final survey. 1st 10 questions – operation size, gh/nursery/bedding etc. –just charactering the facility.

Bulk of questions don't have to do with current grant – most related to reducing "loads" what kind of management practices are you adopting to prevent pesticide runoff.

12 questions directly related to containing and treating runoff.

This afternoon – come up with additional questions for listening sessions – attendees using bmps where we can get in-depth answers/responses.

Survey called a checklist- simply asking whether using a bmp or not – no specific information about the bmp.

We could take some questions from water treatments for the listening session and have treatments options fleshed out.

Other areas needing detailed information:

Separate baseline data for BMPs related to water quality – whether reducing loads/containing runoff. Tease out data that is useful, but we would start to collect data – 5 years – do again and show changes in practice.

General survey to supplement:

Specific to the 5 areas within the planning grant setting the baseline for the grant – listening sessions – get information out of a grower that you won't get out of a survey.

Focus group – needs assessment 5,10,20 years what are the problems . . .big picture, barriers, what do we think the next problems.

Get big picture stuff - get 30 collaborators to fill out the survey – so we could perhaps refine the survey.

Focus group complete it ahead of time – help focus them – idea where we are going what topics that we are thinking.

12 current questions in survey.

Each question (aside from top 10) – 130 bmp question – this is not an inclusive list of all bmps. A list developed in san diego and nrcs – difficult for growers to understand what the bmp actually was unless familiar with NRCS language.

Look at SNA bmp manual – are the bmps we recommend. Julie – bmps checklist – broad hit the mark list -1 or 2 questions from paul fisher.

This survey – a baseline of bmps for whole working group – may want to develop specific questions for measuring the effectiveness of their work and for designing their proposal.

Marc T – don't imitate work from the past. The concept isn't to develop new bmps – it's to see if they are using bmps – it's to see if results from information/practices developed from grant.

Containment –

Paul's survey

Chuan – survey ?s – pathology related questions

Kelly Ivors - ?s not many people treating water – small percentage to answer for more specfics. Design survey for gh/nursery – tailor toward a specific group

Ask Kelly & Chuan for survey questions related to pathogens and treatment

What crops are you growing, what is the cost? What is the benefit?

How to incorporate economic questions –

Cost data – if you have cost data – %age water recycled, % loss

Capital inlay – ROI what do I have to spend, what return will I see, permitting

Drivers for growers to implement a practice; if they don't recognize a practice will provide a return on investment

Load reduction vs. containment in a session (listening session/focus group:

Online survey –dichotomous key survey – quick and simple – if you do/ don't

Those that are recycling – we refine what they are doing:
Those that aren't recycling/containing – find out why.

If you are recycling why
If you were to recycle – what would you do.

A series of equivalent questions asked in a different way.

What concept are we looking for:
What does it mean to contain water? what issues are intrinsic within containment.

Structure for listening session – planned into various issues for a specific time point.

319h grant money – to conduct survey

agriculture not exempt from clean water act – not only runoff but storm runoff – 4 conditional waivers for agriculture – using application of bmps (ag waivers -1st come to education meetings and understand bmps and begin to apply; 2nd set implementing more bmps to improve water quality adequately to meet TMDLs) tier 2 or tier 3 group monitoring and monitoring on your own property – data on a website and environmental groups could see where data originated. Intensive reporting on buffer strips. N uptake of crops you are growing. State water resources control board (in CA) and 9 regional boards – regional board for ag – 2 conditional wavers with voluntary BMPs. Only agriculture in the monitoring region – mostly N and historical use pesticide (still in soil – need good sediment control to prevent erosion – sediment ending up in water ways)

scheduled overflow- make a point discharge.

WE HAVE to make a plan for release of runoff eventually in most of the country – how much water do we need to contain. Do we need to worry about regulation as point sources. Regulators

interested in how many growers implementing BMPs. If TMDLs aren't met, then regulation and runoff requirements/penalties will. Divert

River systems –

½" can be overwhelming if warmer water. How do we impact ecology of a region. Divert stormwater runoff what other issues: water temperature, turbidity?

BMP survey – gave growers a tool that they could show what they were doing to regulators or community groups