

## Whole Cover Crop Conference Questionnaire - Question 5

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### **Nutrient and Fertility Management**

understanding cover crop function in mixes, and nitrogen release curves of mix  
reducing N

Studies on how nutrient content and availability are changed by different cover crops in the southeast US.

how can growers be more aware of what fertility excess or deficits (N) cover crops will provide to their cropping

Nitrogen management

How cover crops can be used to produce nitrogen and scavenge nutrients for the following crops

effects of cover crop on perennial crop composition and quality

Cover crops for nutrient management and fertility

Use of cover crops in (tree) fruit production - nutrient management

Use of cover crops in small fruit production - nutrient management

standardized testing to account for available nutrients.

studies are needed to track and quantify soil fertility and organic matter changes for cropping systems with and

Cover Crop Nitrogen Availability

how to use cover crops on a shorter time scale: fast growing varieties

cover crop mixes that best recover and manage nutrients

N contribution from cover crops and P and K cycling

soil moisture

relationship of cover crop and management with deep soil and management in several commodity crops

quick estimation of nitrogen credits

maximizing and release patterns

covercrop mixes and testing for N inorganic

system improvement for reduced pest problems and improved nutrient management

nitrogen and sulfur cycling in high residue cover crops system

nutrient mgmt- minimum amount of biomass necessary

nutrient management and fertility

nutrient- impact method of destination of cover crop has on soil health

fertility, nutrient use efficiency in systems

nutrient management

IV availability for decomposing cover

measuring soil nutrients

nutrient management- dialing in fertility seeds

nutrient met

how to manage crops

increased study of cover crops

how to quantify the nutrient contribution of covers

fertility mgt with cover crops in sandy soils

nutrient mgt.

How cover crops affect nutrient requirements of subsequent crops - not just N

Determine the best time to incorporate for maximum nutrient availability

Decision support tools for nutrient management

Nutrient management tools for cover cropping are still in their infancy, this work needs to continue and evolve

Management of K in perennial systems

Continue to study nutrient dynamics across cover crop & management types

N rescue

How do cover crop management practices impact soil nutrient management and fertility.

Nutrient Management

prediction of nitrogen availability

long term nitrogen building in continuous crop and cover rotations

## **Soil Biology**

Effects of covercrops on soil health and biology

soil biology

How cover crop mixes can be used to control nematodes.

cover crop effect on soil biology

Standardized testing method to account for biological communities that are present in the soil and if missing

what should be done to promote communities that are in the minority to promote a functioning soil

Tracking microbial population trends

Ecosystem benefits to using diverse species mixtures

attempt to quantify the benefits of soil health

how to use cover crops to best support soil biology

Use of the Haney Test to determine biology of soil.

soil biology

how mixtures influence soil communities

impact of environmental factors on soil

soil biology- microbial activity and its relationship to long run productivity

forget cover crop to maximize certain species of soil

impacts on cover crop use on soil biology

easy indications of soil biology

improving soil management to improve soil characteristics generally associated with soil

encourage dependable soil testing

how to promote soil biology

soil biology-

Study of grasses/ weeds Ect local to Caribbean benefits to soil enrichment

Multi purpose uses of cover crops

soil biology

Varieties and mixtures to best improve soil biology

locally adapted varieties

What are the medium-term changes in soil biology with cover crops and how does the biology affect nutrient

Impact of cover crops on diseases

Effects on biological components

Soil testing

How cover crops enhance soil microbiological processes and increase soil quality/health.

Documenting the impact of cover crop exudates on specific soil biology as in fungal bacterial ratios etc.

Soil Biology

development of quantifiable measurements to assess soil biology activity

identify and quantify types of microbes and functions

can soil biology/microbiology be improved by "adding soil microbes" from a jug?!

how to influence soil biology to provide particular functions

## **Economics**

Economics of grazed cover crops

cost share support

Economics - show solid evidence of financial gain

considering all pros and cons of cover crops, what is the bottom line to producers

Helping farmers understand that cover cropping can save money

What is the cost to plant and what is the potential return. A lot of the return dollars cannot be put too. What is going on with soil health and other areas.

Economics

What is the ROI on cover crops?

how is cover crop going to help or at least not hurt my bottom line

Total economic benefit from a cover crop (i.e. weed control, Nitrogen fixation, organic matter, etc.)

Does it pay?

results in increase net water

what is the value of cover crop investment

economics- need to quantify the long run costs

some good ROI studies by crop and region

economics- more long term studies

economic comparison and mixtures

economics of multi species

does cover crop pay?

economics- putting actual cost data together

do cover crops pay?

economics- long term benefits

economics

how to not lose money in cover cropping

economics of growing cover crops for seed organically

the value of a cover cropping system to a producer

economics

are core crops profitable?

provide more economics emphasis on existing research

ROI

Likelihood of cover crops increasing profits.

agronomics of cc production

Clear economics for all aspects of cover cropping

what is the cost / benefits

We need clear data on the profitability of incorporating cover crops into various systems both short-term and

NRCS Cost share incentives etc

ID the key costs and returns of cover crops

economics in terms of better enterprise budget for farmers to use and costs/returns over rotations with cover

## **Weed Control**

seeding rates and types of covers for effective weed management in vegetable systems.

Successful use of covers for Palmer Amaranth control

Which cover crops are most advantageous for weed control, especially pigweed control in soybeans.

how cover crops can play a role in weed management of herbicide resistant weeds

Weed control in pumpkin patches  
ID and demonstrate new varieties for weed control  
weed control in perennial crops  
How to use cover crops for weed control  
Pigweed control with cover crops  
Comparing termination practices and timing on subsequent crop yield  
published species and rates that provide the best season long weed control for prominent crops of the region.  
how much and what type of cover crops offer the best weed management  
How to improve weed control without tilling the soil.  
The cost and benefit of installing a covercrop versus herbicide applications  
weed  
Best mixes for east NC  
weed control for veggies  
weeds- integrating cover crops with herbicides  
cover crops- weed management for glyphosphate  
expand on methods of weed control in vegetable systems particularly no-till systems  
cover crops for weed control- to study how cover crops limit and reduce the need for spraying pesticides  
a comparison of weed suppression  
weed species abundance  
weed control options in mixed cover  
best biomass ratio for effective weed control  
weed control with cover crops  
ensure cc does not become weed  
Uses of summer and winter cover crops  
Suppression study by weed type  
How cover crop residue and allelopathy can reduce weed pressure  
Equipment and cover crop choices to best control weeds  
Use for weed control  
Using cover crops to eradicate pernicious weeds  
Using cover crops to suppress problem weeds such as Palmer Amaranth. Cover crop Allelopathy for control of  
Cover crop termination methods and effect on weed control

### **Establishment, Termination, Residue**

Timing for specific crops  
continue investigating equipment for use in cover crop management  
How to promote cover crop mixes in historic monoculture CC regions.  
More research on equipment - cover crop establishment, termination and residue  
Are there more risks in planting into a green rolled cover crop as in planting in to a herbicide terminated cover  
early establishment techniques and maximizing biomass  
How to use cover crops for insect and disease management  
Nuts and bolts of how to select and establish cover crops  
Mixtures and rates along with time. How can i establish a certain mixture.  
Breeding better cover crops for proper timing of termination  
What is optimum time to establish cover crops?  
Studies are needed to compare and contrast cover crop termination and residue management alternatives for  
Manging high biomass

How is no till drill a sustainable method that avoids disruption of soil environment two feet below soil surface?  
planting methods and timing to promote early establishment of cover crops- maybe interseeding  
When does it pay, when does it cost? Moneralization for N, differences in disease, bugs, establishment, water establish  
how to best terminate cover crops  
evaluate alternate cover crop systems  
cover crop field days showing establishment in different crop residues and tillage  
managing cover crops for yield benefits NRCS claims yields increase  
optimal seeding rate of different cover crops to achieve benefits at the lowest cost  
cover crop establishment, termination, and residue management- to study how and what the best establishment  
intersecting into rescue for summer  
cultivate evaluation and development for vegetables and cover crops  
how do I plant thru all that junk  
establishment, terminology, residue mgmt  
study planting equipment  
faster maturing cover crops  
c.c. establishment after full season or double crop soybeans  
CiCi establish and regionment  
improval planter technology for cash crop establishment  
plant breeding for cover crops  
high residence cover crop  
How to make cover crops profitable for farmers  
Continuing research on rolling down cover crops  
refine planting methods into high residue  
comparative management of warm vs cool season cover crops winter  
How to decide the best time to terminate covercrops to manage moisture  
payback to yield  
improved establishment technology for both cover and cash crop planting  
What are the seeding rates and time of planting  
small scale veg. system no till approach  
Establishment and termination  
Continue to study practical issues around establishment & termination.  
Costs, benefits, and methods to have a cover crop.  
termination  
systems economically feasible to incorporate alternative cover crops  
more research on termination issues, specifically chemicals and what rates for differing covers  
analyze methods and systems for "best practices"  
ID the best mixes and establishment practices for each cropping system  
identify optimum windows for establishment with various cover crop species  
Better ways of establishing, termination, and residue management. Mixes that work best. etc  
With new crop varieties and mixtures being used, what are the best methods to establish, terminate and

### **Beneficials and Pest Control**

Space use to encourage pollinators  
What beneficial pollinators are best to attract with which cover crops?  
how to attract beneficials throughout the year

beneficial cover crops for vineyards  
use of cover crops to support beneficial insects to control pests  
large farm scale use of cover crops  
after fall/ double cropped  
Dangers of pests or preserving beneficials in cover crops  
Intro of Phorrid fly to control fire ant problem in Caribbean reigon  
nematode control using cover crops  
Army worm control  
ipm/ pollinators  
Beneficial attractants  
Pest management-  
How covers promote beneficials, discourage problems, for specific cropping systems.  
What crop is best for which pollionator and or reduces pests.  
How do cover crops enhance pollinator biodiversity and health.

### **Varieties and Mixtures**

Maturuty differences in cover crops  
varieties  
mixes that work  
dial in appropriate seeding rates for cover crops for regional areas  
Can a 5 or 7 way mix be as productive as a successful 1 way mix?  
benefits of grass, legume, forb mixtures, if any  
Identify new cover crop varieties and mixtures and demonstrate them locally  
What mixtures maybe planted when and what rates. If I plant in December what can i use or do i need to forget  
cover crop. Different mixes and rates. Is there a problem with germination planting behind rye.  
Cover crops varieties and mixes for different crops and areas of the south  
Varieties and Mixtures  
What varieties and mixtures work best following/before planting certain crops, ie. corn, beans, cotton, etc.  
what is optimal mixture and method to plant seeds of different sizes  
we need more information on specific cover crop varieties and mixtures  
development of recommended varieties by region  
cover crop varieties  
Mixes  
corn and soybean varieties tha perform best in covers  
mixtures  
cover crops varieties- need set of pactices  
seeding artes and attention cover crops adopted to subtropical climates used in the US  
cover crops for cotton- establishment, species and rates  
cover crop varieties and mixtures- how blends and mixes bring benefits to the system with regional and readily  
how mixture change over time  
varieties- good mixes for SE and benefits  
what should I plant with  
evaluation of efficacy of varieties  
varieties and mixtures- measure benefits of mixtures  
varieties and mixes- almos no information currently available on mixes  
cover crop varities and mixtures- where does added value end

need to know what each species does when to plant, soil types  
cover crop varieties and mixtures  
varieties-warm season, grass vs clover with state involvement  
study of individual plants  
effectiveness of c.c. seed mixtures  
regional scale evaluation of cc mixtures  
state specific varieties to best meet goals  
find out why  
variety development for cover crop needs  
cover crop varieties  
Basis for selecting mixture types  
What crop is best in clay soil  
Are there justifiable differences in cover crop mixtures to promote specific varieties rather than general  
Development of new varieties with good attributes  
Mixes that work and combos  
CC adaptation to various climates  
Study & develop new cover crop varieties to meet specific needs; study how cover crop mixtures differ from monocultures in terms of weed suppression, nutrient dynamics, microbial dynamics, etc.  
Which species play well together, how to manage them.  
Winter fallow  
which is best  
Cover Crop Varieties  
create a scale if you will that will help farmers determine the best varieties and mixtures for maximizing the next  
further analysis of mixtures and results  
Which cover crop varieties best fit specific areas of the southeast in various row crop rotations.  
better understanding of whether particular varieties and/or mixes provide particular functions

## **Soil Moisture**

Measuring soil moisture for farmers  
Do cover crops increase water retention in the soil and improve infiltration in a conventional tillage system?  
How cover crops impact soil moisture throughout their season, not just spring  
Effect of full term cover crops in no-till systems on soil moisture and temperatures.  
Comparing termination practices and soil water conservation  
Stocking management effects on species diversity dynamics  
how covers reduce soil temp. in summer heat  
ecosystem of water and nutrients management  
what factors affect soil moisture  
moisture- contributions to soil water holding capacity, managing runoff  
effect of cover crops on available soil  
how do cover crop mixes influence soil  
how to use cover crops in semi-arid regions  
how do cover cropping systems affect water capture  
How to increase water budgets and water use efficiency when cover cropping

## **Grazing**

regional specific recommendations for cover crop mixtures

grazing

Provide demonstrations that include nutrient analyses for cover crop grazing

grazing management based on herbicides used and how different cover crop varieties affect livestock gains

how much residue is needed under grazing to realize benefits of cover crops

The implications of grazing covercrops

Grazing management effects on soil health

Grazing Cover Crops

grazing

grazing

soil erosion

need to know what each species does when to plant, soil types

broadening our understanding of grazing system

grazing impact on nutrient cycling

how to use cover crops to extend grazing

grazing- determining how much to graze and how much to leave

increasing adaptation of legume cover crops to replace

Cover crops native to the Caribbean region

Incorporating livestock into overall balanced system

Drought issues

Which cover crop types offer the best added-value for grazing and grain production?

Raising cover crops as part of a row crop production system

More data with different crops and interrelationship of grazing cover crops in those systems.

Integrating annuals for grazing in all forage situations

## **Extension Outreach**

Efficacy of cover crop demonstrations at increasing adoption

extension programs to take cover crop information to growers

Resources for Extension Agents

Extension Outreach

In order for producers to observe new cover crop technologies (Species, termination methods, residue management methods) programs are needed to enable on farm demonstration (give growers first hand

effective extension outreach on cover crops

more effective materials for communicating

how to increase adoption of cover crops

find innovative ways of transmitting extension information

outreach- must reach and educate the end user farmers

outreach- how to effectively disseminate research results

need to be helpful, practical

how can extension programs be more effective

outreach examples for convincing producers to use cover crops in grazing systems

techniques and methods for introducing

develop technology transfer to ensure practical results

how to tell the story

how to promote collaboration among extension, agribusiness, and government

How to overcome issues preventing farmers from adopting cover crops



Introducing cover crops is a big leap for many older, conventionally-minded farmers. What tools can we develop to make a transition less overwhelming and confusing for them?

What's more important for producers: technical assistance or financial assistance?

Get the word out. UGA is behind the 8 ball.

Information is needed to get specifics out to the public.

work with farmers and extension staff to share best practices