

Farmer-Researcher: Mike Reid, Kolapore Gardens, Grey County

In cooperation with Kevin Hamilton, Angie Koch, Ken Laing and Ryan Thiessen

Overarching Research Question: Do spring planted cover crops benefit the production of late season brassica cash crops?

Mike's Specific Question: *How does mowing a cover crop cocktail that includes white clover compare to working up the same cover crop cocktail in terms of fertility contribution and weed management for subsequent direct seeded kohlrabi and transplanted cabbage crops?*

Predictions: Mike expects high yields from the worked up patches as the intended plants will be able to access the nutrients of the decomposing organic matter (OM) more readily; weed pressure will be easier to manage in the worked up patches, with manual hoeing one time; OM will test higher in the worked up patch, but that long term testing would show the unworked/mowed patch to be higher in OM. Finally, Mike hypothesizes that the purely mowed patches will take far less time to prepare.

Mike will:

- Take photos throughout the project
- Keep in contact with EFAO with updates and questions
- Establish and conduct experiment as outlined in Protocol below
- Turn in data by October 2016
- Complete farmer-led research program training and surveys
- Present at the Farmer-led Research Meeting in Kingston, November 29-30
- Maintain current membership in EFAO

EFAO will:

- Monitor progress of project
- Conduct training program
- Help set up Research Protocol, write and publish Protocol
- Reimburse cost of field help, if necessary
- Help analyze data, write and publish Research Report
- Reimburse for cost of cover crop seed
- Provide \$500 payment to farmer at conclusion of project
- Reimburse one night's hotel stay for the Farmer-led Research Meeting in Kingston, November 29-30

Research Protocol & Data Collection

- In spring, establish cover crops in randomized and replicated plots following diagram below and try to maintain uniformity in management across beds and blocks.
- Record weed pressure and cover crop ground cover and aboveground biomass prior to termination.
- Plant late season cash crops; **for each crop species, randomize seedlings across assigned beds**
- Record yield of brassicas crops in both treatment and control plots
- Record labour for treatment and control plots
- Answer questions on data sheet provided.

Experimental Design - continued on Page 2

Contact:

Sarah Hargreaves, sarah@efao.ca, cell (226) 582-0626

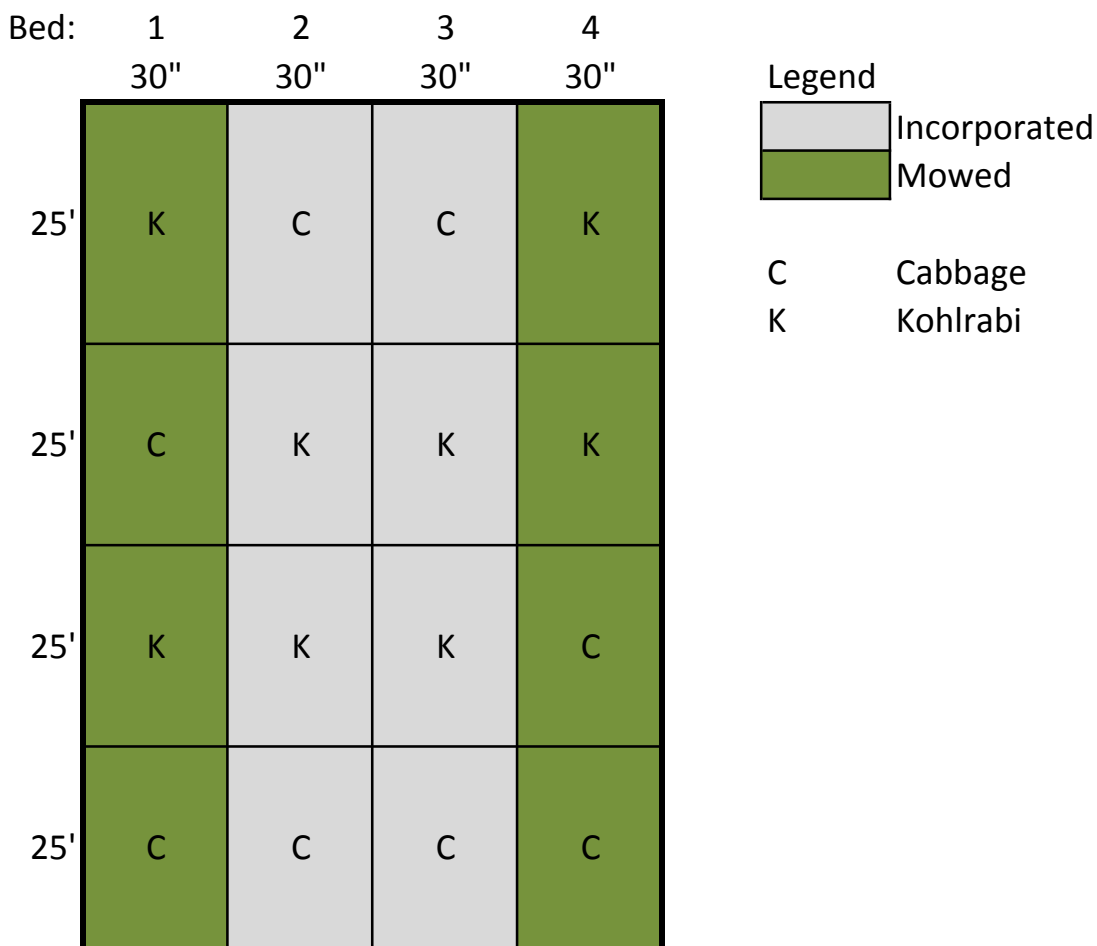
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Farmer-Researcher: Mike Reid, Kolapore Gardens, Grey County

Experimental Design



Farmer-Researcher: Ken Laing, Orchard Hill Farm, Elgin County

In cooperation with Kevin Hamilton, Angie Koch, Mike Reid and Ryan Thiessen

Overarching Research Question: Do spring planted cover crops benefit the production of late season brassica cash crops?

Ken's Specific Question: *Does a cover crop of bell bean boost soil N supply before broccoli?*

There is anecdotal evidence that bell bean, an effective symbiont of N fixing bacteria, will accumulate enough N to meet the high N demand of broccoli.

Ken will:

- Take photos throughout the project
- Keep in contact with EFAO with updates and questions
- Establish and conduct experiment as outlined in Protocol below
- Turn in data by October 2016
- Complete farmer-led research program training and surveys
- Present at the Farmer-led Research Meeting in Kingston, November 29-30
- Maintain current membership in EFAO

EFAO will:

- Monitor progress of project
- Conduct training program
- Help set up Research Protocol, write and publish Protocol
- Reimburse cost of field help, if necessary
- Help analyze data, write and publish Research Report
- Reimburse for cost of cover crop seed and at least \$300 in soil and tissue testing
- Provide \$500 payment to farmer at conclusion of project
- Reimburse one night's hotel stay for the Farmer-led Research Meeting in Kingston, November 29-30

Research Protocol & Data Collection

- In spring, establish cover crops in randomized and replicated plots following diagram below and try to maintain uniformity in management across beds and blocks.
- Record weed pressure, cover crop ground cover and aboveground biomass prior to termination
- Take soil samples from all plots (3-5 cores per plot) for analysis of soil N prior to planting broccoli; $S1B + C:N = \$14.65 + \$8.00 + \text{HST}$
- Plant broccoli after cover crop; **for transplanted crops, randomize seedlings across assigned beds**
- Record labour for treatment and control plots
- Record cumulative harvestable yield of broccoli in cover crop (treatment) and no cover crop control plots
- At time of harvest, sample most mature leaf of broccoli for tissue analysis; $P1T = \$32 + \text{HST}$
- Answer questions on data sheet provided.

Experimental Design - continued on Page 2

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Contact:

Sarah Hargreaves, sarah@efao.ca, cell (226) 582-0626

Farmer-Researcher: Ken Laing, Orchard Hill Farm, Elgin County

Experimental Design

Legend

	Bell bean cover crop
	No cover crop control

Seeding Info

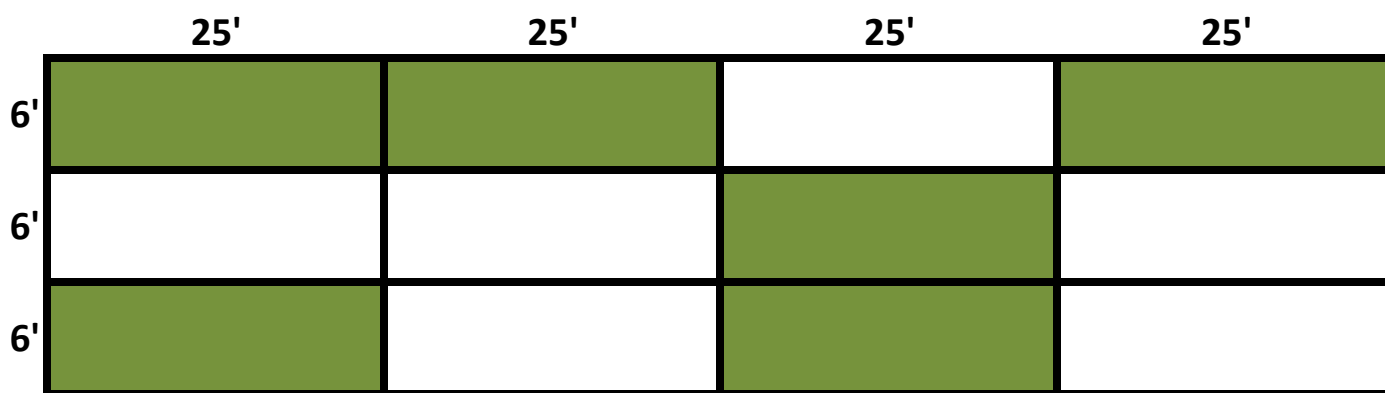
8" between seeds

8" between rows

9 rows / plot

8.8 oz / plot

N



Farmer-Researcher: Angie Koch, Fertile Ground CSA, Waterloo County

In cooperation with Kevin Hamilton, Ken Laing, Mike Reid and Ryan Thiessen

Overarching Research Question: Do spring planted cover crops benefit the production of late season brassica cash crops?

Angie's Specific Question: *Does a cover crop cocktail containing a legume differ from buckwheat monoculture with respect to plant health and harvestable yield of late season brassicas?*

There is potential for a cover crop polyculture to yield greater aboveground biomass and, with a legume, accumulate more N to meet the high N demand of brassicas.

Angie will:

- Take photos throughout the project
- Keep in contact with EFAO with updates and questions
- Establish and conduct experiment as outlined in Protocol below
- Turn in data by October 2016
- Complete farmer-led research program training and surveys
- Present at the Farmer-led Research Meeting in Kingston, November 29-30
- Maintain current membership in EFAO

EFAO will:

- Monitor progress of project
- Conduct training program
- Help set up Research Protocol, write and publish Protocol
- Reimburse cost of field help, if necessary
- Help analyze data, write and publish Research Report
- Reimburse for cost of cover crop seed
- Provide \$500 payment to farmer at conclusion of project
- Reimburse one night's hotel stay for the Farmer-led Research Meeting in Kingston, November 29-30

Research Protocol & Data Collection

- In spring, establish cover crops in randomized and replicated plots following diagram below and try to maintain uniformity in management across beds and blocks.
- Record weed pressure and cover crop ground cover and aboveground biomass prior to termination.
- Plant late season cash crops; **for each crop species, randomize seedlings across assigned beds.**
- Record yield of brassicas crops in both buckwheat (control) and cocktail (treatment) plots.
- Record labour for treatment and control plots.
- Answer questions on data sheet provided; do not take measurements for crops with only one bed.

Experimental Design - continued on Page 2

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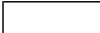

Contact:

Sarah Hargreaves, sarah@efao.ca, cell (226) 582-0626

Farmer-Researcher: Angie Koch, Fertile Ground CSA, Waterloo County

Experimental Design

Legend

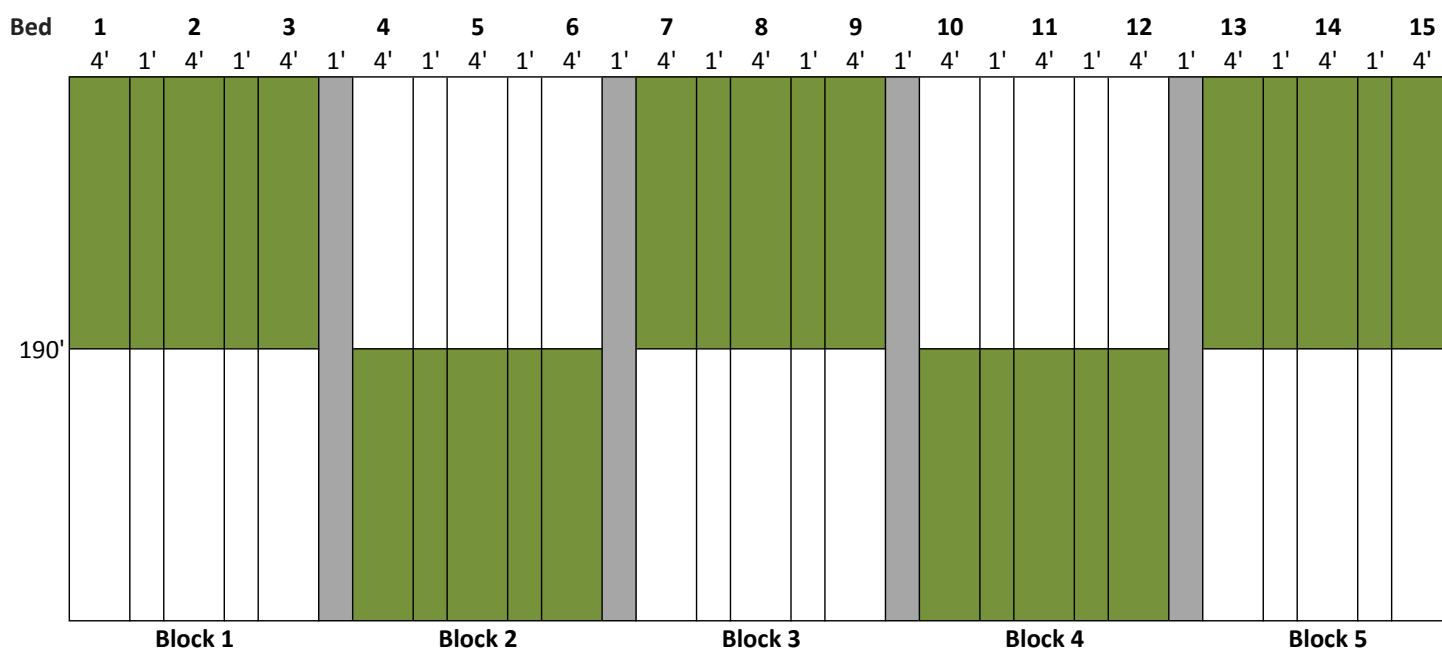
	Buckwheat (control)
	Oats/barley/bean cocktail (treatment)

Note on blocks:

Plant all beds in a block at the same time.

Beds Transplanted brassicas

- 4 Broccoli*
- 3 Cabbage
- 3 Kale
- 1 Rutabegga
- 2 Cauliflower*
- 1 Storage kohlrabi
- 1 ?
- * Sometimes broccoli and cauliflower are mixed



Farmer-Researcher: Kevin Hamilton, Shared Community Harvest Farm, Dunnville

In cooperation with Angie Koch, Ken Laing, Mike Reid and Ryan Thiessen

Overarching Research Question: Do spring planted cover crops benefit the production of late season brassica cash crops?

Kevin's Specific Question: *Does a cover crop cocktail differ from buckwheat monoculture with respect to plant health and harvestable yield of late season brassicas?*

There is potential for a cover crop polyculture to yield greater aboveground biomass, leading to better weed management and harvestable yield. Wire worm is also a big problem in Kevin's area and he is curious to see if different cover crops are better at controlling wire worm.

Kevin will:

- Take photos throughout the project
- Keep in contact with EFAO with updates and questions
- Establish and conduct experiment as outlined in Protocol below
- Turn in data by October 2016
- Complete farmer-led research program training and surveys
- Present at the Farmer-led Research Meeting in Kingston, November 29-30
- Maintain current membership in EFAO

EFAO will:

- Monitor progress of project
- Conduct training program
- Help set up Research Protocol, write and publish Protocol
- Reimburse cost of field help, if necessary
- Help analyze data, write and publish Research Report
- Reimburse for cost of cover crop seed
- Provide \$500 payment to farmer at conclusion of project
- Reimburse one night's hotel stay for the Farmer-led Research Meeting in Kingston, November 29-30

Research Protocol & Data Collection

- In spring, establish cover crops in randomized and replicated plots following diagram below and try to maintain uniformity in management across beds and blocks.
- Record weed pressure, cover crop ground cover and aboveground biomass prior to termination - at least take photos!
- Plant late season cash crops; **for each crop species, randomize seedlings across assigned beds**
- Record labour for treatment and control plots
- Record wire worm damage in treatment and control plots - at least take photos!
- Record yield of brassicas crops in control and treatment plots.
- Answer questions on data sheet provided.

Experimental Design - continued on Page 2

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Contact:

Sarah Hargreaves, sarah@efao.ca, cell (226) 582-0626

Farmer-Researcher: Kevin Hamilton, Shared Community Harvest Farm, Dunnville

Experimental Design - each replicate ~ 1 acre each

Legend

	Buckwheat cover crop
	Cover crop cocktail

REPLICATE 1

D a i k o n	T u r n i p s	H a k u r e i	R e d & B l a c k R a d	W a t e r m e l o n R a d	W a t e r m e l o n R a d
D a i k o n	T u r n i p s	H a k u r e i	R e d & B l a c k R a d	W a t e r m e l o n R a d	W a t e r m e l o n R a d

REPLICATE 2

N a p a	N a p a	K a l e & p a c C h o i	B r o c c o l i	C a u l i f l o w e r	K o h l r a b i
N a p a	N a p a	K a l e & p a c C h o i	B r o c c o l i	C a u l i f l o w e r	K o h l r a b i

REPLICATE 3

D a i k .	T u r n .	H a k .	R & B R a d	W . R a d	W . R a d
D a i k .	T u r n .	H a k .	R & B R a d	W . R a d	W . R a d
N a p a	N a p a	K a l e p a c	B r o c .	C a u l i .	K o h l .
N a p a	N a p a	K a l e p a c	B r o c .	C a u l i .	K o h l .

Farmer-Researcher: Ryan Thiessen, Creek Shore Farms, St. Catharines

In cooperation with Kevin Hamilton, Angie Koch, Ken Laing and Mike Reid

Overarching Research Question: Do spring planted cover crops benefit the production of late season brassica cash crops?

Ryan's Specific Questions:

Experiment 1: *Do cover crops benefit late season brassicas and does a cocktail cover crop containing a legume differ from buckwheat monoculture with respect to plant health and harvestable yield?*

There is potential for a cover crop polyculture to yield greater aboveground biomass and, with a legume, accumulate more N to meet the high N demand of brassicas.

Experiment 2: *How does a cover crop perform interplanted in summer squash with respect to health and yield of late season brussels sprouts?*

Interplanting and cover cropping are two ways to minimize weed pressure and tillage. Combining them may create additional synergies between plants.

Ryan will:

- Take photos throughout the project
- Keep in contact with EFAO with updates and questions
- Establish and conduct experiment as outlined in Protocol below
- Turn in data by October 2016
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- Maintain current membership in EFAO

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- Monitor progress of project
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- Help analyze data, write and publish Research Report
- Reimburse for cost of cover crop seed
- Provide \$500 payment to farmer at conclusion of project
- Reimburse one night's hotel stay for the Farmer-led Research Meeting in Kingston, November 29-30

Research Protocol & Data Collection

- In spring, establish cover crops in randomized and replicated plots following diagram below and try to maintain uniformity in management across beds and blocks.
- Record weed pressure and cover crop ground cover and aboveground biomass prior to termination.
- Plant late season cash crops; **for each crop species, randomize seedlings across assigned beds**
- Record labour for treatment and control plots
- Record yield of brassicas crops in control and treatment plots, including **ball size of Brussels Sprouts**
- Answer questions on data sheet provided.

Experimental Design - continued on Page 2

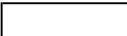


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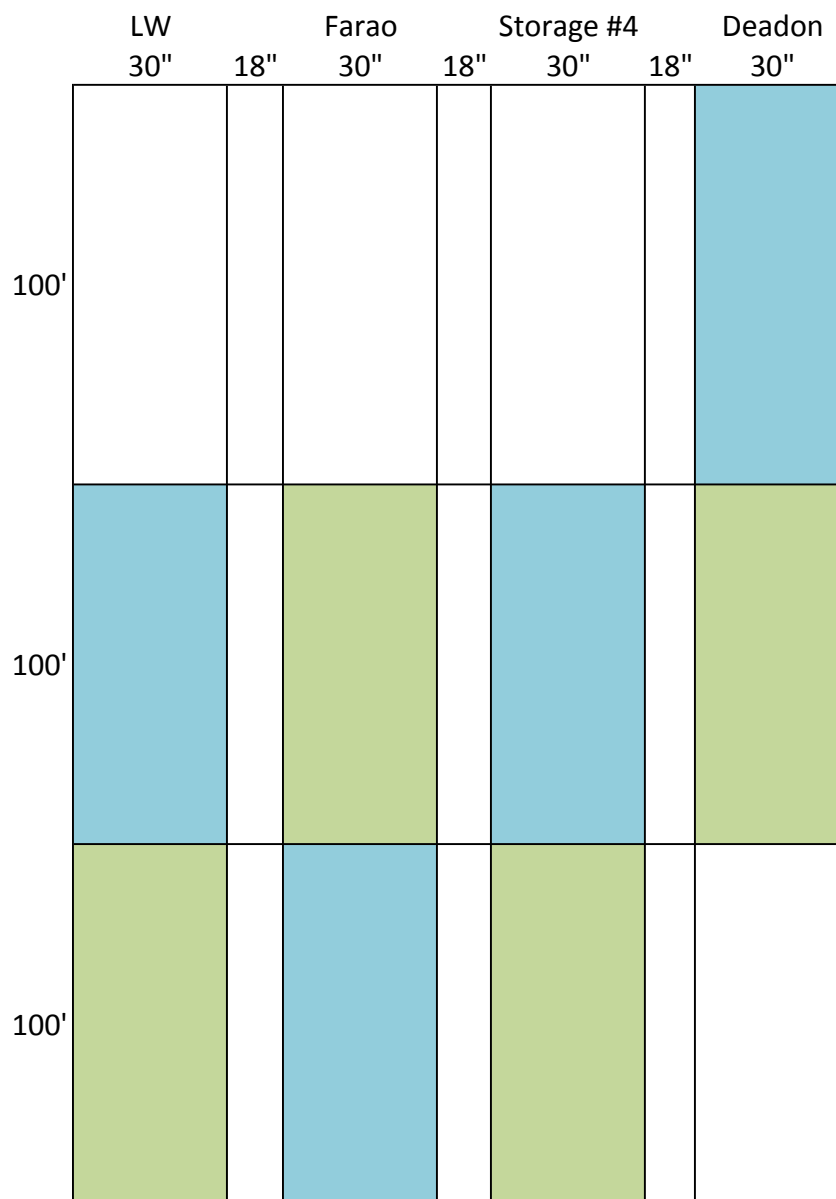
Farmer-Researcher: Ryan Thiessen, Creek Shore Farms, St. Catharines

Experimental Design - EXPERIMENT 1 Buckwheat vs Cocktail

Legend

	No CC
	CC monoculture
	CC polyculture




LW Langedijker
Winterkeeper

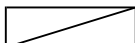
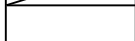


































































Farmer-Researcher: Ryan Thiessen, Creek Shore Farms, St. Catharines

Experimental Design - EXPERIMENT 2 Brussels Sprouts

Legend

	Summer squash only (control)
	CC + summer squash
	No CC or SS

	Variety 1
	Variety 2

Section	Crop Bed	Brussels sprouts																			
		1 30"	18"	2 30"	18"	3 30"	18"	4 30"	18"	5 30"	18"	6 30"	18"	7 30"	18"	8 30"	18"	9 30"	18"	10 30"	
1	12.5"																				
2	12.5"																				
3	12.5"																				
4	12.5"																				
5	12.5"																				
6	12.5"																				
7	12.5"																				
8	12.5"																				
CC trial										Not in official trial											

CC trial

Not in official trial