Potential of sequestration for biomass pyrolyse

Pyreg I - by Helmut Gerber

calorific value lopping	15,0	MJ/kg
calorific value - dried substance	4,2	kWh_{Hi}/kg TS
mass flow rate	120,0	kg/h

1. supply, harvest	l fuel / MWh Biomass		energy content kWh_{Hi} / t biomass		fuel consumption l / t Biomass		$kg\ CO_2$ / l gasoline			
- mowing, chain-saw	0,22	x	4.167	=	0,92	x	2,3	=	2,1	$kg\ CO_2$
2. transportation	km		consumption l / 100 km		consumption l / transport		$kg\ CO_2$ / l gasoline			
- van, 10 km	10	x	8	=	0,8	x	2,3	=	1,8	$kg\ CO_2$
3. preparation of lopping	l fuel / MWh Biomass		energy content kWh_{Hi} / t biomass		fuel consumption l / t Biomass		$kg\ CO_2$ / l diesel			
- shredder	0,85	x	4.167	=	3,5	x	2,6	=	9,2	$kg\ CO_2$
4. Pyrolyse	$kg\ CO_2$ / t Biomass		masse balance carbon/biomass %							
- thermal consumption	1830	x	30					=	1.281,0	$kg\ CO_2$
5. Pyrolyse	electrical power kW_{el}		operating hour for 1 t Biomass		power demand kWh_{el} / t		$kg\ CO_2$ / kWh_{el}			
- electric consumption	2	x	8	=	16,7	x	0,55	=	9,2	$kg\ CO_2$
6. transportation to the farm	km		consumption l / 100 km		consumption l / transport		$kg\ CO_2$ / l diesel			
- lorry, 15 km	15	x	30	=	4,5	x	2,6	=	11,7	$kg\ CO_2$
7. soil insertion	km		consumption l / 100 km		consumption l / transport		$kg\ CO_2$ / l diesel			
- tractor, 20 km	20	x	50	=	10	x	2,6	=	26,0	$kg\ CO_2$

CO_2 - total emission of pyrolyse process per ton biomass (lopping)	Total	1.341,0	$kg\ CO_2$
CO_2 stock while growing per t biomass (lopping)	-	1.830,0	$kg\ CO_2$
CO_2 - sequestration per ton biomass (lopping)	**=**	***-489,0***	***$kg\ CO_2$***