



7. Action tools

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1. Ready reckoner for farming systems identification

1.1 Farming system wise ready reckoner

Farming Systems	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura
Major farming systems (Rank wise)								
1. Agri-Hort (20 districts)	Papumpare , Lower Dibang Valley, West Kameng	Darrang, Jorhat, Kamrup, Karimganj, Tinsukia	Bishnupur, Churachandpur, Senapati		Lunglei	Dimapur, Kohima, Mokokchung, Phek, Wokha, Kolasib, Tuensang		
2. Agri-AH (16 districts)	East Siang, Papumpare , Lower Dibang Valley	Barpeta, Darrang, Kokrajhar			Aizawl, Lawngtlai , Mamit, Saiha, Lunglei	Kohima, Mokokchung , Wokha, Phek	West Sikkim	
3. Agri-Hort-AH (15 districts)	Lohit	Darrang, Jorhat, Kamrup, Karimganj, Kokrajhar, Nagaon, Nalbari, Tinsukia	Bishnupur, Churachandpur, Senapati			Tuensang, Wokha, Zunheboto		
4. Agriculture (14 districts)	West Siang	Darrang, Nagaon	Bishnupur, Churachandpur, Ukhrul, Senapati		Aizawl, Lawngtlai , Lunglei, Mamit	Dimapur, Kohima		West Tripura
5. Horticulture (10 districts)	West Siang		Bishnupur, Churachandpur, Ukhrul		Aizawl, Lawngtlai , Mamit, Saiha, Serchhip			West Tripura
Minor farming systems (Rank wise)								
Farming Systems	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura
1. Agri-Hort-AH-Fishery (8 districts)	Lohit, Lower Dibang Valley	Jorhat, Kamrup, Kokrajhar, Nagaon, Sivasagar		Ri-bhoi				
2. Agri-Hort-Fishery (7 districts)		Barpeta, Darrang, Jorhat, Karimganj, Nalbari, Tinsukia				Wokha		
3. Agri-Fishery (5 districts)	West Siang, Lower Dibang Valley		Bishnupur, Churachandpur			Kohima		
4. Animal Husbandry (4 districts)	West Siang				Serchhip	Phek		West Tripura
5. Agri-Hort-AH-Seri (4 districts)		Barpeta, Jorhat, Nagaon		Ri-Bhoi				

6. Hort-AH (4 districts)		Nalbari, Sivasagar			Aizawl		West Sikkim	
7. Horti-Agri- AH (3 districts)	East Siang, West Kameng							West Tripur a
8. Agri-AH- Fishery (4 districts)		Barpeta, Nagaon				Kohima, Mokokchung		
9. Fishery- Agri (3 districts)					Aizawl, Lunglei, Mamit			
10. AH-Agri- Hort (2 districts)	Papumpare							West Tripur a

Unique farming systems prevailing in only a single district

Farming Systems	Arunachal Pradesh	Assam	Manipur	Megh alaya	Mizoram	Nagaland	Sikkim	Tripu ra
1. Agri- Hort- Fishery- AH- Forestry	Tirap							
2. Agri-AH- Hort- Fishery	East Siang							
3. Silvi-Agri- Hort	Papumpare							
4. Fishery- Agri-Horti	Papumpare							
5. Agri-Horti- AH- Forestry	Tirap							
6. Agri- Fishery-AH		Darrang						
7. Agri-Seri- Horti		Darrang						
8. Agri-Horti- Fishery-AH		Darrang						
9. Agri-Horti- AH-Seri- Fishery		Jorhat						
10. Agri-Horti- Seri		Jorhat						
11. Horti-AH- Fishery		Kamrup						
12. Horti-Seri		Kamrup						
13. Agri- Apiculture		Nagaon						
14. AH-Horti- Agri		Sivasagar						
15. Agri-Horti- Silvicultur e		Tinsukia						
16. Agroforest ry			Senapati					
17. AH-Agri			Senapati					

18. Horti-Agri-AH-Fishery				Ri-bhoi				
19. Agri-Horti-AH-Apiculture				Ri-bhoi				
20. Seri-Agroforestry-Apiculture					Aizawl			
21. Fishery					Serchhip			
22. Sericulture					Serchhip			
23. Agroforestry-Agriculture						Phek		
24. Horti-Apiculture						Kohima		
25. Agri-Silvi-Horti-Pastural						Phek		
26. Horti-Pisci-Agri								West Tripura
27. Agri-Horti-Silvipastoral-AH								West Tripura
28. Plantation (rubber) based								West Tripura
29. Plantation-fishery-AH								West Tripura

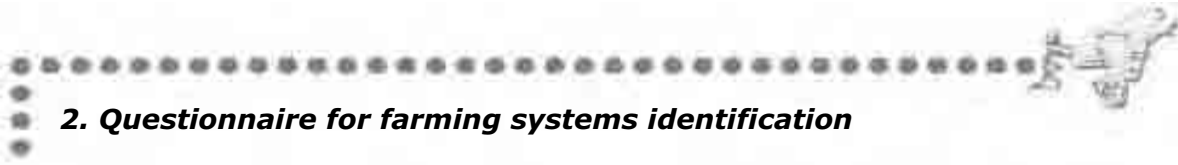
1.2 State wise and Agro Ecological Zone wise ready reckoner

Agro ecological Zones	Farming systems
Arunachal Pradesh	
<ol style="list-style-type: none"> Humid Hyper-thermic Foot Hills Zone Per-humid Humid Hyper-thermic Foot Hills Zone Thermic Per-humid Mid hills & Valleys Zone Thermic Humid Mid hills & Valleys Zone Alpine and high hills Zone 	<ol style="list-style-type: none"> Agri – AH - Hort - Fishery (East Siang) Hort – Agri – AH (East Siang) Agri - AH (East Siang, Lower Dibang Valley, Papumpare) Agri - Hort - Animal Husb (Lohit) Agri - Hort - Animal Husb - Fishery (Lohit) Agriculture – AH - Poultry (Papumpare, Lower Dibang Valley) Agriculture - Horticulture (Papumpare, Lower Dibang Valley) AH - Agriculture - Horticulture (Papumpare) Silviculture - Agriculture - Horticulture (Papumpare) Fisheries - Agriculture - Horticulture (Papumpare) Agri - Hort - Pisciculture - Animal Husb - Forestry (Tirap) Agri - Hort - Animal Husb - Forestry (Tirap) Agri - Hort (West Kameng) Agri – Fishery (West Siang) Agri – Hort (West Siang) Hort (West Siang) Animal Husbandry (West Siang) Agriculture- Fishery (Lower Dibang Valley) Agri - Hort - AH - Fishery (Lower Dibang Valley)

Assam	
<ol style="list-style-type: none"> Lower Brahmaputra valley Zone Upper Brahmaputra valley Zone Central Brahmaputra valley Zone North bank plain Zone Hills Zone Barak valley Zone 	<ol style="list-style-type: none"> Agri – Hort – AH - Sericulture (Barpeta, Jorhat) Agri – AH - Hort (Barpeta) Agri - AH (Barpeta, Darrang, Kokrajhar, Cachar) Agri - AH-Fishery (Barpeta, Nagaon, Cachar) Agri - Hort - Fishery (Barpeta, Darrang, Jorhat, Karimganj, Nalbari, Tinsukia) Agriculture-Fishery - A.H. (Darrang) Agri - Hort - A.H. (Darrang, Jorhat, Kamrup, Karimganj, Kokrajhar, Nagaon, Nalbari, Tinsukia) Agri - Hort -Fishery (Darrang, Jorhat, Karimganj, Nalbari, Tinsukia) Agri - Seri - Hort (Darrang) Agri- Hort - Fishery- A.H.(Darrang) Agri- Hort - A.H.(Darrang, Jorhat, Karimganj, Nagaon, Nalbari, Tinsukia) Agriculture (Darrang, Nagaon) Agriculture- Hort (Darrang, Jorhat, Kamrup, Karimganj, Tinsukia) Agri – Hort – AH - Fishery (Jorhat, Kamrup, Kokrajhar, Nagaon, Sivasagar) Agri – Hort – AH – Sericulture -Fishery (Jorhat) Agri – Hort - AH –Sericulture (Jorhat, Nagaon) Agri – Hort - Sericulture (Jorhat) Hort – AH - Fishery (Kamrup) Hort - Sericulture (Kamrup) Agri – Apiculture (Nagaon) Hort - AH (Nalbari, Sivasagar, Cachar) AH – Hort – Agri (Sivasagar) Agri – Hort – Silviculture (Tinsukia)
Manipur	
<ol style="list-style-type: none"> Sub-tropical plain Zone Sub-tropical hill Zone Mild-temperate Zone 	<ol style="list-style-type: none"> Agriculture based (Bishnupur, Churachandpur, Senapati, Ukhrul) Horticulture based (Bishnupur, Churachandpur, Ukhrul) Agri – Hort (Bishnupur, Churachandpur, Senapati) gri – Hort – AH (Bishnupur, Churachandpur, Senapati) Agri - Fishery (Bishnupur, Churachandpur) AH - Agriculture (Senapati) Agro-forestry (Senapati)
Meghalaya	
<ol style="list-style-type: none"> Tropical Zone (100-300 msl) Sub-tropical Zone (300-1100 msl) Temperate Zone (1100-2000 msl) 	<ol style="list-style-type: none"> Agri - Hort - A.H- Fishery (Ri-bhoi, Jaintia Hills) Agri - Hort - AH -Sericulture (Ri-bhoi, Jaintia Hills) Hort - Agri - AH -Fishery (Ri-bhoi,) Agri - Hort - AH - Apiculture (Ri-bhoi) Agri - Hort - AH (Jaintia Hills)
Mizoram	
<ol style="list-style-type: none"> Humid Temperate Sub-Alpine Zone Humid Sub-Tropical Hill Zone Humid Mild Tropical Hill Zone 	<ol style="list-style-type: none"> Agri based (Aizawl, Lawngtlai, Lunglei, Mamit) Agri - Horticulture (Lunglei, Aizawl) Horticulture based (Aizawl, Lawngtlai, Mamit, Saiha, Serchhip) Agri - Animal Husbandry (Lunglei, Aizawl) Sericulture - Agro forestry –Apiculture (Aizawl) Fishery – Agri (Aizawl, Lunglei, Mamit) Horticulture – AH (Aizawl) AH - Agri (Lawngtlai, Mamit, Saiha) Animal Husbandry based (Serchhip)

	10. Fishery based (Serchhip) 11. Sericulture based (Serchhip)
Nagaland	
1. Temperate Zone 2. Subtropical Zone	1. Agri – Hort – AH - Fishery (Dimapur, Phek) 2. Agri – Hort – AH – Fishery – Sericulture (Dimapur) 3. Agri - Animal Husbandry (Kohima, Mokokchung, Wokha) 4. Agri - Horticulture (Kohima, Mokokchung, Phek, Tuensang, Wokha) 5. Agri - AH - Fishery (Kohima, Mokokchung) 6. Agri based (Kohima) 7. Hort - Apiculture (Kohima) 8. Agri - Fishery (Kohima) 9. Agri – Silvi – Horti - Pastural (Phek) 10. Agri - Hort (Phek, Tuensang) 11. Agri – Hort – Fishery (Pani-kheti System) (Phek) 12. Agri - Hort - AH (Tuensang, Wokha), Zunheboto 13. Agri – Hort - Fishery (Wokha)
Sikkim	
1. Alpine Zone 2. Temperate Zone 3. Sub tropical Zone	1. Agriculture - Horticulture - Animal Husbandry (North Sikkim, West Sikkim) 2. Hort - AH (West Sikkim) 3. Agri - AH (West Sikkim)
Tripura	
1. Humid Dissected Mount & Valleys Zone 2. Sub Humid Zone 3. Sub Humid Denuded Hills Zone	1. Agri – Hort – Pisciculture – Livestock (West Tripura) 2. Hort – Agri -Livestock (West Tripura) 3. Hort – Pisciculture - Agriculture (West Tripura) 4. Livestock – Agri – Horticulture (West Tripura) 5. Agri - Hort –Silvipastoral - Livestock (West Tripura) 6. Plantation (Rubber) based (West Tripura)





2. Questionnaire for farming systems identification

Farming System Analysis of _____ District, _____ State

About farming systems:

A *farming system* is defined as a population of individual farm systems that have broadly similar resource bases, enterprise patterns, household livelihoods and constraints, and for which similar development strategies and interventions would be appropriate. Depending on the scale of the analysis, a farming system can encompass a few dozen or many millions of households.

The classification of the farming systems of developing regions has been based on the following criteria:

- available natural resource base, including water, land, grazing areas and forest; climate, of which altitude is one important determinant; landscape, including slope; farm size, tenure and organization; and
- dominant pattern of farm activities and household livelihoods, including field crops, livestock, trees, aquaculture, hunting and gathering, processing and off-farm activities; and taking into account the main technologies used, which determine the intensity of production and integration of crops, livestock and other activities.

For further reading refer: (http://www.fao.org/farmingsystems/description_en.htm)

Analyzing existing farming systems of the district is a fundamental need of any KVK. Hence, this study is aimed at identifying the various farming systems existing in a KVK district, the analysis of which will help in developing and executing meaningful action plans by individual KVKs.

How to use this questionnaire?

This questionnaire contains two parts of which the first part is titled '**Agricultural characteristics of the KVK district**'. This part aims at collecting the bench mark data which in turn is used later for identifying the various farming systems existing in the KVK district. The data required in this part is secondary in nature. This can be collected from State Departments, SAUs, ICAR and other government publications. The same is also available in various websites over the internet. Care should be taken to collect data only from authentic sources particularly while using internet as the source.

The second part titled '**Farming systems in the KVK district**' has to be done by the KVK staff itself based on the data collected in first part. The basis/criteria for identifying farming systems are provided. Based on the criteria listed in part two, the agro-ecological situations identified in part – I have to be classified into homogeneous farming situations. The same may be compiled in a table as shown in part two. Based on the farming systems identified the constraints under each element has to be listed out. The KVKs has to develop action plans to mitigate these constraints by providing the development strategy pertaining to each case.

(Note: Please don't change any of the units specified in the questionnaire. The data has to be strictly compiled confirming to the units specified in the questionnaire)

Part - I

1. Agricultural characteristics of the KVK district, _____

- 1.1.1 A brief description of the district (in about 250 words)
- 1.1.2 Position in relation to longitude and latitude:
- 1.1.3 Altitude from MSL : _____
- 1.1.4 Boundaries of your district : _____
- E: _____ W: _____ N: _____ S: _____
- NE: _____ SE: _____ SW: _____ NW: _____
- 1.1.5 Total population : _____
- 1.1.6 Area of the district : _____ sq km
- 1.1.7 Population density : _____ (to be calculated based on total population and area of the district)
- 1.1.8 Literacy percentage : _____
- 1.1.9 Status of agriculture : _____ (Rainfed/irrigated/Shifting etc)
- 1.1.10 Farmers : _____
- a. Big farmers : _____ (nos)
- b. Small farmers : _____
- c. Marginal farmers : _____
- d. Agricultural labourers : _____
- 1.1.9 Farm labour mobility
- a. Is sufficient farm labour available in your district: YES/NO
- b. If 'NO' from which places do they come from?
- c. If 'YES' whether they do work in near by or other districts also? YES/NO
- d. if 'YES' to which districts they go for work?

1.2 Physiography

- 1.2.1 Highlands : _____ (in ha)
- 1.2.2 Midlands : _____
- 1.2.3 Lowlands : _____
- 1.2.4 Hilly tract : _____
- 1.2.5 General nature of the terrain (in about 50 words)

1.3 Climates (Please tick the appropriate one)

- 1.3.1 Arid/Semi-arid/Not Applicable
- 1.3.2 Tropical/Sub-tropical/Not Applicable
- 1.3.3 Temperate/Sub-temperate/Not Applicable
- 1.3.4 Humid/Sub-humid/Not Applicable
- 1.3.5 Pattern of rainfall in different months (Provide as high, medium or low)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

1.3.6 Did you observe any special weather phenomenon in your district? If yes, please provide a short write up in about 100 words.

1.3.7 Maximum and minimum temperatures recorded: Max: ____ Min: ____

1.3.8 Critical periods for plant growth in your district (Provide major crop wise)

Sl. No	Crop	Critical periods of growth	Coinciding calendar month(s)
1.			
2.			
3.			
4.			
5.			

1.4 Soils

1.4.1 Which are the Soil group classifications present in your district?

- 1.
- 2.
- 3.
4. (Add more if any)

1.4.2 Black soils : Present (____ ha) / Not Present

1.4.3 Red soils : Present (____ ha) / Not Present

1.4.4 Alluvial soils : Present (____ ha) / Not Present

1.4.5 Sandy soils : Present (____ ha) / Not Present

1.4.6 Laterite soils : Present (____ ha) / Not Present

1.4.7 Saline and alkaline soils : Present (____ ha) / Not Present

1.4.8 Acid soils : Present (____ ha) / Not Present

1.4.9 Soil fertility status (in general) : High/Medium/Low

1.5 Irrigation

1.5.1 Area under irrigation : _____ ha

1.5.2 Irrigation potential : _____ ha

1.5.3 Source of irrigation

1. Rivers : _____ nos

2. Tanks : _____ nos

3. Open wells : _____ nos

4. Bore wells : _____ nos

5. Any other sources : _____ : _____ nos

_____ : _____ nos

1.6 Land use and Cropping intensity

- 1.6.1 Gross cropped area : _____ ha
 1.6.2 Net Area sown : _____ ha
 1.6.3 Fallow lands : _____ ha
 1.6.4 Cultivable waste lands : _____ ha
 1.6.5 Forest cover : _____ ha
 1.6.6 Barren lands : _____ ha
 1.6.7 Cropping intensity : _____

1.7 Major Crops

- 1.7.1 Principal crops, area, production and productivity (Please don't change the units specified below)

Sl. No	Principal Crops	Area (in ha)	Production (in tones) (1ton=1000kg)	Productivity (kg/ha)
1.				
2.				
3.				
4.				
5.				
6.				
7.				

- 1.7.2 Crop rotations followed : 1.
2.
3.
- 1.7.3 Crop sequences followed : 1.
2.
3.
- 1.7.4 Inter-cropping done, if any : 1.
2.
3.
- 1.7.5 Mixed cropping done, if any : 1.
2.
3.
- 1.7.6 Catch crops grown, if any : 1.
2.
3.

1.8 Socio-economic Characteristics, Land Holding Pattern

- 1.8.1 Average size of land holdings : _____ ha

- 1.8.2 Average fragmentation intensity : _____ nos (ie a holding gets fragmented to this many nos)
- 1.8.3 Existing land tenure system(s) :
- 1.8.4 Source(s) of finance for farming : Rank 1. _____
Rank 2. _____
Rank 3. _____
- 1.8.5 Main source of income for farmers : Rank 1. _____
Rank 2. _____
Rank 3. _____
- 1.8.6 Commercial commodities produced : Rank 1. _____
Rank 2. _____
Rank 3. _____

1.9 Farm Machinery and Implements available in your district

- 1.9.1 Number of tractors : _____ nos
- 1.9.2 Number of power tillers : _____ nos
- 1.9.3 Number of carts : _____ nos
- 1.9.4 Types of implements-Ploughs : _____ nos
Cultivators : _____ nos
Discs : _____ nos
Harrows : _____ nos
Others : _____ nos
- 1.9.5 Pumps (Oil and electrical) : ___ & ___ nos
- 1.9.6 Harvesters and Threshers : ___ & ___ nos
- 1.9.7 Sprayers and Dusters : ___ & ___ nos

1.10 Livestock

- 1.10.1 Cattle : _____ nos
- 1.10.2 Buffaloes : _____ nos
- 1.10.3 Sheep and goats : ___ & ___ nos
- 1.10.4 Pigs : _____ nos
- 1.10.5 Poultry and ducks : ___ & ___ nos
- 1.10.6 Production of milk : _____ ltr
- 1.10.7 Production of meat : _____ ton
- 1.10.8 Production of eggs : _____ nos
- 1.10.9 Production of wool : _____ qtl

1.11 Livestock holding patterns

- 1.11.1 Livestock holding pattern for big farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.			
2.			
3.			
4.			
5.			

1.11.2 Livestock holding pattern for small farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.			
2.			
3.			
4.			
5.			

1.11.3 Livestock holding pattern for marginal farmers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.			
2.			
3.			
4.			
5.			

1.11.4 Livestock holding pattern for agricultural labourers

Sl. No	Animal/ bird	Average nos possessed	Rank according to nos possessed
1.			
2.			
3.			
4.			
5.			

Average yields of various animals and bird in your district.

Sl. No	Animal/bird	Average yield (Specify Units)
1.		

2.		
3.		
4.		
5.		

1.12 Research Resources

- 1.12.1 Number of research stations : _____ nos
- 1.12.2 Number of ICAR institutes/substations : _____ nos
- 1.12.3 Number of state seed farms : _____ nos
- 1.12.4 Number of private seed farms : _____ nos

1.13 Agricultural Marketing Status and Constraints

1.13.1 Ways of disposal of farm produce and by-products

Sl. No	Major Farm produce	Marketing channel	Bye product (if any)	Marketing channel
1.				
2.				
3.				
4.				
5.				

1.13.2 Market types – whole sale and retail markets in your district

- a. Wholesale markets : 1. _____ 2. _____ 3. _____
- b. Retail markets : 1. _____ 2. _____ 3. _____

1.13.3 Major modes of transport to market:

- 1. _____
- 2. _____
- 3. _____
- 4. _____

1.13.4 Available/commonly used conveyance facilities (roads/waterways) to market :

- 1. _____
- 2. _____
- 3. _____
- 4. _____

1.14 Agro-climatic Zones (map to be collected and added with)

1.14.1 Various zones in your state :

- 1. _____

- 2. _____
- 3. _____
- 4. _____

1.14.2 List the various zones in your district :

- 1. _____
- 2. _____
- 3. _____
- 4. _____

Part - II

2. Farming systems in the district

2.1 Basis/Criteria for identifying farming systems:

Each farming system must be homogeneous, in general for the following.

- 1. Soils
- 2. Rainfall
- 3. Physiography
- 4. Altitude
- 5. Irrigation pattern
- 6. Temperature

2.2 Summary of farming Systems

Based on the criteria listed under the above items, classify the agro-ecological situation into homogeneous farming situations and thus may be furnished in a table as shown below.

Farming system	Soils	Rainfall	Altitude	Principal crops/breeds	Important features	Location (area), extent of area in ha.

2.3 Agricultural characteristics of each farming System

(Classify and arrange the data collected in Part-I into Farming system wise under the following headings given below. The pattern followed under part – I can be repeated here for compilation)

2.3.1 Boundaries of the FS

- 2.3.2 Soils under the FS
- 2.3.3 Climates under the FS
- 2.3.4 Physiography under the FS
- 2.3.5 Irrigation facilities under the FS
- 2.3.6 Major crops and cropping intensity under the FS
- 2.3.7 Major cropping systems under the FS
- 2.3.8 Land use pattern under the FS
- 2.3.9 Land holding pattern under the FS
- 2.3.10 Populations and socio-economic characteristics under the FS
- 2.3.11 Adoption pattern for each crop/breed/other technology under the FS
- 2.3.12 General production constraints for each crop under the FS

In the same fashion the required information may be furnished for all farming systems. After identifying constraints/gaps (technology/extension) under each farming system, the priorities have to be delineated and the development strategy in form of action plan has to be prepared and presented below.

2.4 Research Priorities and Strategy

2.4.1 Research gaps identified for each farming system and crop

Sl. No	Farming system	Crops under the FS	Research gaps identified

2.4.2 Research priorities finalized for each farming system and crop

Sl. No	Farming system	Crops under the FS	Research priorities finalised

2.4.3 Research strategy proposed for each farming system and crop

Sl. No	Farming system	Crops under the FS	Research strategy proposed

2.5 Development Strategy

2.5.1 Extension gaps for each farming system and crop

Sl. No	Farming system	Crops under the FS	Extension gaps identified

2.5.2 Extension priorities finalized for each farming system and crop

Sl. No	Farming system	Crops under the FS	Extension priorities finalized

2.5.3 Extension strategy for each farming system and crop

Sl. No	Farming system	Crops under the FS	Extension strategy proposed



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