

Analysis of Credit demand by Smallholder Farmers in Bende Local Government Area of Abia State

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ABSTRACT

Key Words

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The study analyzed the credit demand by small holder farmers and was carried out in Bende L.G.A of Abia State, South Eastern Nigeria. A multi-stage sampling procedure was used for the study in the selection of 90 smallholder farmers. Data were collected using structured questionnaire. Descriptive statistical tools, multiple regression and Probit models were employed in the data analysis. The result shows that the mean age of the respondents was 43.5 years 62.16% were female and majority (54.39%) were married. Meanwhile, 48.84% had no formal education with mean household size of 6.3 and did not belong to any social group. The result on volume of credit demanded showed that majority applied for loan within ₦51,000-100,000. Regression results of factors affecting volume of credit demanded showed that the coefficient for age, educational level, household size, farming experience, interest rate, loan transaction cost and annual income were all significant at 1%, 5%, 1%, 1%, 5%, 1%, and 5% respectively. The Probit regression result shows that increasing household size (1%), profit gain from loan (1%), and having multiple income sources (1%) all affect the farmer's capacity to repay borrowed funds. Some of the problems encountered by small holder farmers in accessing credit from formal and informal sources include, high interest rate, short repayment time, spending a lot of time before getting the credit, inadequate collateral, lack of banks in the rural areas and complex bank procedure. The study therefore recommends that the farmers should be enlightened about the existence of formal agricultural credits and ways to access them. Measures should be put in place to monitor, check and reduce the misappropriation of agricultural credit by beneficiaries. Lastly, the problem of delay in disbursement of loans/credit to farmers should be properly addressed.

Introduction

The Nigerian agricultural sector is an important part of the Nigerian economy. The sector is made up of mainly smallholder farmers who operate at subsistence level with land holding average of less than 5 hectares (Asogwa, Abu and Ocheche, 2014). These smallholder farmers produce over 90% of available food in the country and 70% of the labour force rely on the sector (Amao, Adebayo ana Anaynwuyi, 2003). The farmers operate mainly in the rural areas and use traditional methods due to low output, low income low, capacity to save and lack of collateral for accessing credit which result to low investment. Due to the subsistence nature of the smallholder's farming activities coupled with low inputs, extension of credit to them would improve their productivity thereby enhancing returns on investment.

Credit provides a smoother flow of money in times when there are constrictions of cash flows that would otherwise cause disruptions in production and consumption (Ssonko and Nakayaga, 2014). The importance of credit in agricultural enterprise production and development can be appraised from the level of problems emanating from the lack of it. Every modern business is operated on own capital or borrowed capital. Similarly farming also requires capital. The need for farm credit in increasing production and effective utilization of farm resources is quite clear. Agricultural credit is an important financial support that a small farmer can get in order to bridge the gap between the income and expenditure in the field. In order to tackle the problem of availability of agricultural credit for

smallholder farmers, the Nigerian government resorted to establishing specialized credit institutions such as Nigerian Agricultural and Cooperative Bank (NACB), Nigerian Agricultural and Rural Development Bank (NARDB), Agricultural Credit Guarantee Scheme (ACGS) etc. for agricultural purposes. However, despite these credit scheme, the supply of credit to the agricultural sector did not meet the demand (Owusu-Antwi, 2010), such that a large number of farmers were left out. The provision of agricultural credit for agribusiness enterprises is hardly enough, without the efficient utilization of such credit in order to increase productivity. Repayment rate is low as borrowers erroneously believe that credit from government is not supposed to be repaid. Also the high level of loan default among borrowers remained a major impediment which reduced the willingness of the financial institutions to increase lending to the sector (Olagunju and Adeyomo, 2007). Nevertheless, the inadequate access to credit by the households remains a major constraint to agricultural productivity. It is therefore necessary that adequate credit should be made available to the farmers in order to achieve a total transformation of the agricultural sector from subsistence orientation to market orientation. Hence, this study seeks to find out the extent to which smallholder farmers had access to credit facilities in the study area. Specifically, the study sought to examine the socio-economic characteristics of the smallholder farmers; identify the sources of credit and amount of credit demanded by the farmers; analyse the determinants of volume of credit demanded and loan repayment capacity of the farmers and finally examine the problems encountered by the farmers.

2. Research Methods

The study was carried out in Bende local government area of Abia state, south eastern Nigeria. It is located in the northern part of Abia state and lies between the latitudes of 4° 40' and 6° 14' north and longitudes 7° 10'

and 8° East. The major occupation of the people is farming. They produce crops such as rice, yam, maize cassava and vegetables.

The study comprised of all smaller holder farmers in Bende local government area of Abia state. A multi-stage sampling procedure was employed to select a sample size needed for this study. In the first stage, three (3) communities were selected from Bende local government area by simple random sampling, the second stage involved a selection of three (3) villages from each of the three communities making nine (9) villages. While in the last stage, ten (10) credit users were selected from each village based on the list obtained from credit institutions, giving a sample size

of ninety (90) farmers. The data for this study were obtained using a structured questionnaire and through oral interview and personal observation.

Table 1: Multi Stage Sampling of the Small-holder Farmers in the Study

<i>Local Government Area</i>	<i>Communities</i>	<i>Villages</i>
Bende	Bende District	Agbomiri, Obuohia, Okporoenyi
	Uzuakoli	Amankwo, Agbozu, Ngwu
	Umu-Menyi	Akoli-Imenyi, Amoji, Elu-Lodu

Source: Field Survey, 2016

Method of Data Analysis

The data were analysed using econometric models and descriptive statistical tools such as mean, percentage, frequency distribution. The socio-economic characteristics of the respondents, sources of credit, amount of credit demanded and the problems encountered by the smallholder farmers in accessing credit in the study area were analyzed using simple descriptive tools like tables and frequencies while the determinants of volume of credit used and loan repayment capacity were analyzed using multiple regression model and Probit model respectively.

Model Specification

Multiple Regression Model:

$$Y = F(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9) + e_i \text{-----(1)}$$

Where ; Y = volume of credit demanded (naira), X₁ =Age (years), X₂ =Sex (male = 1 otherwise = 0), X₃ =Educational status (years spent in school), X₄ =Household size (number), X₅ =Farming experience (years), X₆ = Interest charge (₦), X₇ = Loan transaction cost (₦), X₈ =Annual farm income (₦), X₉ =Member of any association (Yes =1, No = 0), e_i = error term

Probit model:

$$Y1 = F-1(\pi) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \dots + \beta_{11} X_{11} + u \text{(2)}$$

Y1 > 0 otherwise (1= able to pay, 0 = not able to pay), X₁ = Age (years), X₂ = Gender (male=1, otherwise = 0), X₃ = Marital status (Married=1, Otherwise = 0), X₄ = Educational level (years), X₅ = Household size (number), X₆ = Farming experience (years), X₇ = Amount of loan obtained by farmers (₦), X₈ = Time of repayment (months), X₉ = Profit gain from loan (₦), X₁₀ = Number of supervisory visits (days), X₁₁ = Multiple income sources (Yes=1, No=0), e = error term

3. Results and Discussion

Socio-Economic Characteristics of the smallholder farmers

The socio-economic characteristics of the cocoa marketers are presented in table 2. The features examined include age, sex, marital status, household size, level of education, farming experience and cooperative membership. The information from the survey shows that the mean age of the farmers was 43.5 years. This means that majority of the farmers were middle aged. These categories of farmers could be considered to be the economically active population, as the age of the farmers dictates and affects the amount of credit he or she will source at a particular interest rate. This finding agrees with Olarinde *et al.*, (2005), who found that old people tend to be risk averse than young people. This finding is also similar to the results obtained by Adejare and Arimi (2013) who reported that the majority of agricultural labour force in Nigeria falls between 35 to 50 years. Majority of the respondents (62.16%) were women. This result agrees with the findings of Arimi (2014), that more females are involved in the farming activity than men. However, the presence of higher number of women can be a disadvantage since men have more opportunity to obtain credit than their female counterparts due to the issue of collateral required by most of the financial institutions. From the study, most (54.39%) of the farmers in the area were married. This shows that the contribution of the farmers in the study area towards agricultural development should be favourable as a reasonable number of them were married. This result supported the findings of Okoye *et al.* (2010) who reported that married people are responsible individuals whose views are highly respected within rural communities in Africa. The higher percentage of 56.61% in household size of 6-10 members may mean additional responsibilities; hence the farmer increase in household size will make the farmer to meet the additional financial commitments (Orebiyi, *et al.*, 2012). They will be serious on their farming business with the view of making profit (Orebiyi, *et al.*, 2012). In addition, larger household size may be beneficial as family labour may be maximized.

The result on educational status evidently indicated that most of the respondents lack formal education. By implication, it would be difficult for them to obtain credit from financial institutions as this requires formalities such as filling forms as well as being rational enough to select the financial institution that offers the best interest rate at a given time. The level of education, if high, makes one more enlightened and promotes the ability to evaluate new techniques

(Olarinde *et al.*, 2005). The sampled respondents had an average farming experience of 12.5 years. This indicated active participation of the respondents in agricultural

Table 2: Frequency Distribution of Respondents According to their Socio-economic Characteristics

Variables	Frequency	Percentage	
Age			
<40	26	28.86	Mean = 43.5
40-49	39	43.29	
50-59	21	23.31	
≥60	4	4.44	
Total	90	100	
Sex			
Female	56	62.16	Mean = 6.3
Male	34	37.74	
Total	90	100	
Marital Status			
Single	15	16.65	Mean = 12.5
Married	49	54.39	
Widowed	17	18.87	
Divorced	9	9.99	
Total	90	100	
Household Size			
1-5	39	43.29	Mean = 6.3
6-10	51	56.61	
Total	90	100	
Educational Status			
No formal education	44	48.84	Mean = 12.5
Primary level	29	32.19	
Secondary level	14	15.54	
Tertiary level	3	3.33	
Total	90	100	
Farming Experience			
1-5	14	15.54	Mean = 12.5
6-10	19	21.09	
11-15	39	43.29	
≥16	18	19.98	
Total	90	100	
Cooperative Membership			
Yes	59	65.49	Mean = 12.5
No	31	34.41	
Total	90	100	

Source: Field Survey, 2016.

production in the area. Arimi (2014) opined that higher number of years of experience in farming helps a farmer to understand and tackle the complications of the enterprise. This gives them a wider range of experience to make adoption decisions with regards to climate change. Majority (65.49%) of the respondents belong to one form of farmers' association or the other. These farmers' organizations are effective channels of communicating information to farmers (Arimi, 2014). Therefore, information that will increase farmers' knowledge and skill on how to access credit can be passed on to them through their associations.

Table 3: Distribution of Respondents According to their Annual Income

Annual income	Frequency	Percentages (%)
<50,000	27	29.97
51,000-100,000	44	48.84
101,000-150,000	13	14.43
151,000-200,000	6	6.66
Total	90	100
Mean	83,480	

Source: Field Survey Data, 2016.

The annual income level of the farmers in the study area is presented in Table 3. The result shows that the mean annual income of the respondents was ₦83,480. The implication of the finding is that farmers in the study may have limited access to credit facilities. This is because access to credit is enhanced by high income which will enable them to save and be able to increase their capital assets required as collaterals by the financial institutions. This finding shares a common view with Alabi *et al.*, (2008) who reported that a farmer with a profitable supplementary income could become an early adopter of new technology that may require credit facilities.

Sources of Credit Used and Amount of Credit Demanded by Small Holder Farmers

The source of credit used by farmers in agricultural production in the study area is presented in table 4. It is evident that most farmers found it difficult to obtain agricultural credit. Various sources of credit by the farmers in the study area were identified. Table 4 disclosed that majority (81.03% and 72.15%) of the farmers obtained credit from Personal Savings and Credit Associations respectively. It is obvious that majority of the farmers depend on informal creditors who charge exorbitant interest rate. This means that they have not been able to exploit the low interest rate charged by the formal credit institutions. This agrees with the survey carried by Krain (1998) who observed that credit from formal financial institutions meet only a small portion of the total credit demand of the agricultural sector. He found out that credit from the formal financial sources accounted for only 9.9% of the total credit available to the agricultural sector. The remaining 90.1 percent from the informal financial sources mainly comprises loans from relatives, friends, rotational savings groups or credit groups and one's superior at work (boss) and other sources. This could be that poor farmers in the area lacked title deeds for pieces of land they own and as a result they do not qualify for bank credit where collateral are mostly required. This was further reinforced by the findings of Steel *et al.*

(1997), who reported that reliance on collateral by banks often however, exclude many otherwise credit worthy small-scale farmers in many African countries where land title are not well documented or readily transferable.

Table 4: Distribution of Respondents According to the Sources of Credit Used

Sources	Types	*Frequency	Percentages (%)
Informal	Relatives	27	29.97
	Moneylenders	18	19.98
	Personal savings	73	81.03
	Credit Association	65	72.15
Formal	Microfinance Banks	54	59.94
	Commercial Banks	12	13.32
	BOA	28	31.08
	Development Banks	16	17.76

Source: Field Survey Data, 2016. *Multiple responses recorded

Many (45.51%) of the respondents obtained credit at the range of ₦51,000-100,000 as shown in Table 5 above while 26.64% obtained credit between ₦101,000-150,000. This shows that most of the borrowers obtained (45.51%) less than N150,000 amount of credit. It may be that majority of farmers in the area are peasant farmers with small land holdings who could not afford the exorbitant interest rate charged by most financial institutions especially in the informal sector.

Table 5 Distribution of Respondents According to volume of credit obtained

Amount of credit (₦)	Frequency	Percentages (%)
<50,000	11	12.21
51,000-100,000	41	45.51
101,000-150,000	24	26.64
151,000-200,000	8	8.88
201,000-250,000	6	6.66
Total	90	100

Source: Field Survey Data, 2016.

Factors Affecting the Volume of Credit Demanded by Farmers

The factors that determined the volume of credit demanded by farmers in the study area were estimated using multiple regression analysis and the outcome is presented in Table 6.

Table 6: Determinants of volume of credit Demand

Variables	Linear	Semi-log	+Double log	Exponential
Constant	18.291 (0.507)	15.421 (3.550)	38.913 (0.117)	29.042 (1.604)
Age	-11.085 (-1.074)	-2.709 (-1.251)	-0.051 (-5.897)***	-0.009 (-1.148)
Sex	14.331 (1.0936)	3.111 (1.283)	0.032 (1.084)	0.007 (1.108)
Educational Level	14.201 (1.076)	1.609 (1.557)	0.064 (6.163)**	0.007 (1.174)
Household size	9.082 (4.316)***	1.716 (5.695)***	0.083 (7.119)***	0.006 (4.923)***
Farm Experience	10.491 (5.208)***	2.504 (1.215)	0.083 (5.852)***	0.006 (4.643)**
Interest charge	-10.801 (-6.189)**	-1.665 (-1.317)	-0.071 (-5.049)**	-0.007 (-1.193)
Loan transaction cost	-13.039 (-6.189)***	-1.371 (-1.117)	-0.093 (-5.353)***	-0.009 (-7.583)
Annual farm income	17.120 (5.530)**	1.822 (1.491)	0.0726 (4.808)**	0.009 (3.957)**
Membership of Association	10.921 (1.157)	3.117 (1.096)	0.092 (1.104)	0.007 (1.043)
R square (R ²)	0.4928	0.4013	0.8769	0.5926
Adjusted R ²	0.250	0.247	0.421	0.406
F-ratio	4.226	2.918	16.112***	6.336***
N	90	90	90	90

Source: Field Survey Data, 2016. NB: ***= significant at 1% **= significant at 5% *= significant at 10%; Value in parenthesis are the t-ratios, + = lead equation

The double log functional form produced the best fit and hence it was chosen as the lead equation as shown in Table 6 above. The choice is based on the premise that it has the highest value of coefficient of multiple determination (R²), highest number of significant variables and conformity to *a priori* expectation. The F-ratio was statistically significant at 1%. This implies that the sample data fit the model and that the independent variables are important explanatory factors of the variations in the dependent variable. The R² was 0.8769 indicating that about 88% of the variation in the dependent variable is explained by the variations in the independent variables. The table also shows that the coefficient for age, educational level, household size, farming experience, interest rate, loan transaction cost and annual income were all significant at 1%, 5%, 1%, 1%, 5%, 1%, and 5% respectively. This shows that they

are important determinants of credit demand in the study area. However, the coefficients for sex and membership of association were not significant even at 5% level. The coefficient for loan transaction cost and interest on loan were both significant and negatively signed, implying that the higher the magnitude of these variables, the lower the amount of credit demands.

The coefficient for age was significant and negatively signed, implying that the age of farmers had an inverse relationship with credit demand and that the older one gets, the lesser the amount of credit that will be demanded, this is consistent with the findings of Mbah, (2009) who found age of farmers insignificant to the amount of credit demanded. The coefficients for household size, level of education and farming experience were all significant and positively signed, implying that the higher the magnitude of these variables, the higher the amount of credit that will be demanded. This finding agrees with those of Ohajianya and Onyeweaku (2003) who found a positive relationship between level of education, household size and farming experience and amount of credit demanded. The coefficient for farm size is significant and positive, implying that it had a positive influence on credit demand by farmers, this result agrees with the findings of Amanze and Eze (2010). The coefficient for annual income was significant and positively signed, implying that as the income of the farmer increases, the demand for credit will also increase, this result agrees with the findings of Nwagbo, (2004) who found a positive relationship between farm income and credit demanded.

Determinants of Loan Repayment Capability of the Smallholder Farmers

The estimated parameters of the factors that influenced loan repayment by small holder farmers in the study presented in Table 7.

Table 7: Probit estimate of factors influencing loan repayment by smallholder farmers

Variables	Coefficient	Std. Error	z-Statistic	Prob.	Marginal effects
Constant	-1.86043	1.81830	-0.71772	0.2588	
Age	0.039565	0.531602*	0.27073	0.0067	0.03789
Sex	-0.463365	1.056406*	-0.438624	0.6091	-0.19534
Marital status	-1.373728	0.80546***	1.51715	0.0093	-0.66323
Edu. Lev	0.032535	0.120171***	0.37073	0.0064	0.02154
Household size	-0.0097	0.105449***	0.093847	0.0002	-0.00439
Farm Exp.	0.003342	0.060146***	0.062196	0.0004	0.002126
Farm size	0.036662	0.083961	0.317553	0.7508	0.010117
Amount of loan	-5.83E-05	0.000415	-0.216269	0.8388	-0.00048
Tim of repay	0.259276	0.520608	0.498025	0.6185	0.10266
Profit gain from loan	1.767525	0.4955848***	0.161178	0.073	0.67037
Supervisory visit	0.625628	0.542161**	-1.153954	0.0459	0.31498
Income sources	1.249051	1.047271***	1.192672	0.003	0.52221
LR statistic (12 df)	22.71078	McFadden R ²	0.170896		
				F(Z)= 0.473	
				Z= -0.054591426	
				Probability (LR state) 0.068848	

Source: Field Survey Data, 2016. NB: ***= significant at



1% **= significant at 5% *= significant at 10%

The result in Table 7 shows that, a likelihood ratio (LR) statistic of 22.71078 with a Chi-squared (X^2) distribution at 12 degree of freedom is significant at 10% level. This means that at least one of the explanatory variables in the model has a significant effect on small holder farmers ability to pay for their loans and that the explanatory variables jointly influence small holder farmers' ability to pay for their loans. The coefficient of household size is negatively related to small holder farmers' ability to repay their loans and is highly significant at 1% level. Increasing farmers' household size by one person decreases the likelihood of being able to repay one's loan by 0.43%. This means that the smaller the size of the farm family, the higher the probability that small holder farmers will be able to repay their loans and vice versa. As household income depleted, liability of the household increased and there would be greater tendency to divert loans meant for small holder farm production resulting in default in loan repayment. The results corroborate those of Ugbomeh *et al.* (2008) who found that household size impacted negatively on loan repayment performance of women farmers. They attributed the outcome to the likelihood of women with large household members to divert some of the borrowed fund to unintended purposes for the upkeep of their households. Profit gain from loan and the years of farming experience are both highly significant at 1% level and are positively related to small holder farmers' ability to repay their loans. An increase in the profit gained from the use of the loan will increase the likelihood of being able to repay one's loan by 67.03%. Similarly, increasing small holder farming experience by one more year increases the likelihood of a farmer being able to repay his/her loan by 0.21%. This means that the likelihood of the farmer being able to pay for his/her loan will increase when these variables (profit gain from loan and the years of farming experience) increase and vice versa. This confirms the findings of Oladeebo and Oladeebo (2008) who found a significant positive relationship between loan repayment abilities and profit as well as farming experience. The implication is that farming experience could probably lead to proper utilization of agricultural loans and inputs and this could have a positive effect on the magnitude of farm profit and consequently loan repayment ability would be enhanced. The result also showed that multiple income sources were very significant at 1%. Table 7 shows that small holder farmers who have access to other sources of income were 52.22% more likely to be able to repay their loans than small holder farmers who depend solely on their farm income. This is in line with the results of Ojiako

and Ogbukwa (2012) who found that the correlation between respondents' engagement in other jobs and their ability to repay their loans were positive and highly significant. The implication is that as the farmer engages in other income generating activities, he/she will not divert loans meant for farming activities to unintended purposes since those activities would be taken care of by off farm income. Educational level and marital status are highly significant at 1%. While educational level is positively related to small holder farmers' ability to repay their loans, marriage is negatively related to it. Increasing small holder farmers' educational level by one year has the effect of increasing the likelihood of a small holder farmer being able to repay his/her loan by 2.15%. In the same way, married smallholder farmers are 66.32% less likely to be able to repay their loans than single small holder farmers. This implies that a farmer will likely have greater loan repayment ability when he or she has a higher educational level and vice versa whiles single farmers will probably have greater loan repayment ability than married farmers. This also confirms the results of Ojiako and Ogbukwa (2012) in which level of education and marital status had equally significant positive and negative correlations respectively. Furthermore, the number of supervisory visits is positively related to small holder farmers' ability to repay their loans and is significant at 5% level. Increasing the number of supervisory visits by one day increases the probability of a farmer being able to repay his/her loan by 31.49%. This means that the more credit officers visit farmers to supervise how loan is used, the better farmers' repayment abilities and vice versa. Finally, age is significant at 10% and has a positive coefficient. Addition of one more year to a small holder farmers' age has the effect of increasing the likelihood of him/her being able to repay his/her loan by 3.78%. It means that older farmers have better loan repayment abilities than young farmers. This could be due to the many years of small holder farming experience that these older farmers have. Ojiako and Ogbukwa (2012) had similar results.

Problems Encountered by the Farmers in Accessing Credit

The problem encountered by farmers in obtaining credit from sources is shown in Table 8. Farmers in the study area encountered some problems which hindered them from accessing both formal and informal financial institutions to boost agricultural production. Major problems identified includes high interest rate (91.02%), short repayment time (79.92%), a lot of time spent in getting credit (73.26%) inadequate collateral (69.93%), lack of banks in the rural areas (61.05%) and complex bank procedure (56.61%). This agrees with Deyo *et al* (2009) who observed that large loan from banks could

not be accessed by most smallholders because of lack of collateral and high interest rate. Agnet (2004) opined that complex mechanism of commercial banking is least understood by the small-scale farmers and thus limit their access

Table 8: Problems Encountered By Farmers in Accessing Credit

Problems	*Frequency	Percentage (%)
Lack of good information about agro-credit	46	51.06
Repayment time is too short for production cycle	72	79.92
Inadequate collateral	63	69.93
High transaction cost	48	53.28
High interest rate	82	91.02
Complicated loan procedure	51	56.61
A lot of time is spent on getting the credit	66	73.26
High cost of transportation from home to sources	28	31.08
Not given the full amount applied for	43	47.73
Lack of banks in rural areas	55	61.05

Source: Field Survey Data, 2016. *Multiple responses recorded.

4. Conclusion

The result of the study shows that majority of the farmers are within the active productive age which would enable them gain access to credit from lending institutions. The informal sources of credit are the backbone of the farmers when compared to the financial institutions due to ambiguous lending procedures and high interest rates. Based on the findings, it was recommended that the farmers should be enlightened about the existence of formal agricultural credits and ways to access them. This will enable them obtain the necessary financial assistance that will help boost their agricultural investment, thereby, increasing their farm income. Measures should be put in place to monitor, check and reduce the misappropriation of agricultural credit by beneficiaries. Finally, the problem of delay in disbursement of loans/credit to farmers should be properly addressed, as this would help to improve their access to agricultural credit and thus, increase

agricultural production.

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